

ART TREASURY

Containing many Profitable Extraordinary Rareties, and Curious Inventions.

In two PARTS.

PART I. Containing the Mystery of Dying Cloths, Silks, Stuffs, Hair, Feathers, Bone, Horn, Ivory, Leather, &c. The manner of preparing Colours, Directions to take out Spots, Stains, Pitch, Tar, Wax, Rosin, &c. out of Silks, Stuffs, Woollen, Linen, &c. To recover faded Colours and preserve Apparel, &c. To scower Silver and Gold Lace, Plate, &c. Preparing Cement for Glass, China, &c. Diapering Linen, making Perfumes. The Art of Drawing, Limning, Painting, preparing and laying on Colours, Etching, Engraving, Cutting, Gilding, Enammelling, refreshing Pictures, Hangings, Carpets, preparing Flock-work-cloth, directions to Paint thereon, and to make sundry Colours, prepare Gums, Alum-water. The Art of thickening Linnen, Washing or Colouring Maps, or Printed Pictures, with sundry other things, &c.

PART II. Containing the Quality, Generation and Product of Metals and Minerals, Natural and Artificial; directions to harden or soften them for use. The Art of Souldering, Burnishing, and Gilding Metals. Instructions for making Inks of all kinds and Colours, preparing Gold or Silver for Writing, and all manner of Sealing-wax, Wafers, &c. Gold and Silver to know the fineness, and to detect counterfeit Coins. How to write sundry ways, that it shall not appear without the help of Fire, Water, &c. taking Blots and writing off Paper or Parchment. The Mystery of beautifying, writing with Gold or Silver, Colouring, Dressing, Cleansing, and Perfuming Gloves, Ribands &c. Imbossing in Plate, Wax-work, Imagery, Dyalling, Gauging, Washing Point-lace, Tiffany, Sarcenet, Lutestring, and any coloured Silks, &c. Weighing Ships, extinguishing Fire, blowing up Houses or Vessels under Water, &c.

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THE
PREFACE
TO THE
READER.

READER,

HAVING well weighed and considered, That a Book containing sundry Varieties of this Nature, might prove exceeding useful, I held it highly necessary for the Advantage of the Industrious part of Mankind, as well for the Increase of Profit as Pleasure, besides my own Experience, to consult the best Authors and greatest Masters, most approved in all Ages for their Skill and Dexterity in what I have adventured to lay down; and from their worthy Labours have extracted even the quintessentials part of what their many years Study and Practice had brought to perfection; and not only so, but rendered that which seemed hard, and to many unintelligible, plain and easie to be understood and practised, adding a great number of New Receipts and Curious Matters, never before

The Preface.

made Publick: So that all things rightly considered, I may justly term this Book, though small in itself, yet exceeding Copious and Elaborate in what it comprehends and contains, The Store-house or Treasury of Art, &c. nothing being omitted that in the least I conceived pertinent or conducing to the Illustration or Advantage of a Subject woven with so many Golden Threads of Variety, to render it the better acceptable and more grateful to the Sons of Art, and all Lovers of Ingenuity; which may over and above prove as a friendly Guide and Instructor, even to the unskilful in these Affairs, and lead them as it were by the hand to the Knowledge of Things and Matters worthy their best and more serious Considerations; the which that it may do and prove universally Beneficial and Useful, as the various Subjects it candidly, experimentally, and Impartially Treats of, is the hearty wish of,

Reader,

Your Friend, and

Very Humble Servant,

John White.

Art's

Art's Treasury, or a profitable and pleasing Invitation to the Lovers of Ingenuity.

CHAP. I.

*The Art and Mystery of Dying Silks, Stuffs,
Cloth, Feathers, &c. In the most Curious and
Delightful Colours, with the manner of order-
ing, making and preparing them, &c.*

SO pleasing to the Eyes of Mankind, are the vari-
ous Colours that we daily or frequently behold,
that they in a manner captivate and detain even
the Fancy it self with Wonder and Delight.
Wherefore, I have thought it highly convenient,
amongst the many stupendious Secrets and Curiosities this
Book contains, as well tending to Profit, as Pleasure, if
duly practised, to place the Art of Colouring, vulgarly
called Dying, in the beginning, as an Introduction to the
rest, it being much wanted, and frequently coveted by
Publick and Private Persons, to be known, and rightly
managed. Wherefore for its better Improvement, take
the following Rules and Directions,

To Colour or Dye Wool, or Woollen Cloth a curious Red. Take
a considerable quantity of Alum, and dissolve it in Water,
wherein Bran has been boiled and strained out, putting the
Cloth, Wool, or Yarn, to sleep in it, which being well

steeped, put it into other clear Water, heating it over a gentle fire, putting thereto greening Weed, two Pounds to four Gallons of Water, stirring it about; but not suffering it to boil; add more, a handful of unslaked Lime, and as much Wood-Ashes, stirring about the Materials, adding yet a like quantity of Lime, Ashes, and a pound of the Powder of Log-Wood, or Red-Wood, and the like of Brazil, and so in three or four Hours time, a very fair Colour to your Satisfaction will be taken.

To dye Linen Thread, or Cloth Red, &c. Take a pound of Sam-fleur; and suffer it, for the space of twenty four Hours, to soak in two Gallons of Water, heating over a gentle fire; then add half a pound of the Powder of Brazil, two Ounces of Vermillion, and an Ounce of Alum, dissolved in a pint of fair water.

To dye a clear, or pleasant light Red. Take Wheat Bran, half a Peck, two Ounces of Alum, and boil them in four Gallons of fair Water, then through a fine hair sieve, strain out the liquid part; then dissolve in it half a pound of Alum, and the like quantity of white Tartar, and put in the Stuff, Cloth, &c. intended for Colouring, adding three pound of Madder, and perfect the Colour at a Moderate heat without boiling.

To dye Silk a Sanguine Colour. Take a pound of Alum, and two pound of Greening weed, bruise them well and pour upon them fair Water, add then half a pound of Ground Brazil, heat them over the Fire, and put the Silk in some part of the liquid Matter, suffering it to seeth therein, and so renew it with the remainder, till you find your Colour take, and having so done three times, rinse it in Lee of Oak bark, or Wood ashes, and afterwards in Water.

To dye a Fair Blue. Take white Silk, Stuff or Cloth that is white, and soak it in Water, then having wrung the Water out, add two pound of Woold or Wood, a pound of Indico, and three ounces of Alum, and then gently heat and dissolve them in the Water, and so dip your Materials, till you perceive the Colour has taken.

To dye a Purple Colour. Take the Silk, Stuff or Cloth, that has already taken a blue, and dip it in Brazil and Alum-

Alum-Water, at Moderate heats; and you will soon perceive your Colour answer your Expectation.

To dye Carnation. Take a dry purper, and soak it a Night in Man's Urine; then take your Gloash, that has been soaked in Alum-Water, and dried again, and put it therein, suffer the Purper before hand to be twice scethed in fair Water; then set another Vessel by the Fire, and suffer the Cloth to take the dye therein.

To dye a deep Red Carnation. Take Linen and Woollen white, Gall, and Alum it well, and take the Herb call'd by the Dutch Foli, which is to be found on the Banks of Ditches, to the quantity of a pound well dried; *Indian Lake*, four Ounces, *Spanish Red*, two ounces; make of these and Alum-water a hot Liquor, and dip your Materials therein, at gentle heats three or four times, and it will afford a Curious Colour.

To dye Silk Quins a Curious Red. Steep first your Silk in Alum-water, giving it a gentle heat, adding thereto in the heating, Bran-water; then take a pound and a half of Greening weed, and so heat it up, and put the Silk therein, but let it not seeth, then take it out and rins it in Ley, and after that in Water, adding some Rowden of Log-wood; and so heating it up a second time, the business will be perfected.

To dye a Fair Yellow. Take the Stalks, Leaves and Seeds, of Wood, the Rotts being cut off, and lay them in soak in Ley of wood Ashes, for the space of three Hours, after that seeth them, till you think they are sufficiently sodden; then put them into hot Water and Urine, add heat them up indifferent well straining the liquid part through a Sieve, adding to every two Pounds of Wood, two pounds of Verdigrease, with the Ley already sod, stirring and well mixing it together in your Liquor, for the space of three Hours, and so dip into it very hot at three or four times what you intend to Colour.

Another way to dye a curious Purple, viz. In case you dye Silk you intend to dye, you must to one pound of it take four ounces of Alum and a Gallon of Water, dissolving the Alum therein o'er a gentle Fire; putting then the Silk therein, and suffering it to lie, for the space of four hours; then

then take of Indian Lake and Indico, each a quarter of a pound, add likewise a quart of Urine, and so heat them up into a dye, adding more about a handful of Cochinele.

A Curious Green Water to make. Take half an ounce of Verdigrease, bruise it well, put thereto the yolk of an Egg, and a few Blades of Saffron; then take of the Leaves of Spurge half a handful, bruise them with a quarter of a Pint of Vinegar, straining the liquid part through a Cloth, and mingle it with the Materials before mentioned, so thin that it may take, either in Dying or Painting.

To make a Black Water to dye Silk, Cloth, &c. Take half a pound of Nut-galls, add to them a pottle of Water, and an ounce of Lamb-black, with a handful of the rust or filings of Iron, heat them up, adding half a Pound of Coperas, seeth them to a half Consumption, adding then a Pint of Gum-water, and so set it by for your use, &c. and it will prove Excellent good, the longer it is kept, it being the better.

To dye Linen or Silk a Rosered. Take to every four yards and a half, a pound of Nut-galls, and seeth them in fair Water unbruised, for the space of two Hours, when pouring out the liquid part into another Vessel or Bat, put your Linen, &c. into it, and suffer it to soak for the space of four Hours; then wring it dry, and heat it again in Alum and fair Water, adding half a pound of Brazil Powder, and a pound of Greening-weed, and so by gentle heats make up your Colour to the height.

To dye a Fair Green. Take Bran-water and Alum, a Gallon of the former, to a pound of the latter, and seeth them up, till the Alum is dissolved; then for about a quarter of an Hour, let your Silk or Cloth lie therein; then take more Bran-water and a few handfuls of Woad, and put it therein, till it become a dark Yellow; then add Verdigrease and Indico of each half a pound or more, or less of the one or the other, as you would have it lighter or darker.

To dye a good Black. Take two pounds of Galls, and half a pound of Coperas, seeth them in Water over a gentle Fire, putting your Silk, Stuff or Cloth therein, and stirring it about; then hang it to dry, and prepare your dye.

in this manner, viz. Take a large Fatt, and put therein three or four handfuls of Rye Meal, and half so much of Swarf of the Grind-stone or Smiths Water, with two handfuls of Elderbark, and the like quantity of the rust of Iron, and having suffered it to stand for the space of three days, heat it up and put your Materials therein, &c.

To make a thick Water to Work on Yellow Silk the best way. Take two Quarts of the best Varnish, add to it an ounce of the Flower of Sulphur, half ounce of Camphire; then seeth it a while, and suffer it to cool, straining it through a Cloth, to take away the grosser part; and when you use it, let it be mixed with a small quantity of Gum-Arabick Water,

To make a Curious Red Water. Take two Quarts of fair Water, four Ounces of Gum-Arabick, a pound of faucet Woad, seeth them together, till half be consumed; and then taking it off, put into the remainder half an ounce of Spanish Green, and about thirty Grains of Cochinele, and so use it as you see convenient.

To make a Curious Blue Water for Silks, Stuffs, or Wool-len. Take three parts of Soap-boilers Ashes, and one part of unquenched Lime, make of them a Ley, and suffer it well to settle, then add to the thinner part taken off, a pound of Boloemen, stirring them well together over a gentle fire, adding a pound of Woad, and half a pound of Indico, dipping what you intend to Colour therein when it is very hot.

To Work on Yellow Silk, White, Grey, or Azure Colours. Take a Pottle of fair Water, and a fourth part of Gum-Arabick, and half a Pottle of Faucet-Woad, an ounce of Arsnick, and the like quantity of Tumerick ground small, and seeth them over a gentle Fire, putting a small quantity of Grains therein, and so apply it to your Use, as you see convenient.

To make a Red Water for White Silk or Wool, Green, Yellow, Violet or Azure. Take two Quarts of Running Water, and an Ounce of Brazil, heat them up till half be consumed; then take it off the Fire, and put in an Ounce of Grains, and a quarter of an Ounce of Gum Arabick, with

a quarter of a Pound of Alum Powder, and suffering it to stand all Night, in the Morning you may use it.

To make Grey Florey. Take Florey, and soak it twenty four Hours, at the end of which, wring it through a Cloth; then take the Ashes of the Vine, and make a Ley with them, and spread the Florey for the space of two Hours upon a Table, and having put the Ley into three Vessels, take the Florey, and put it into one of the said Vessels, and so shift it to the rest, putting before you dip your Linen, &c. Vinegar to it, and your Colour will be Good.

To dye Linen with Crampmede. Use in this a Pound of Crampmede, to three Ells of Linen, and put it to a Gallon and a half of Water, or so proportionable to the quantity, and warm it over the Fire, till it appears ready to seeth; then add to it two Ounces of Galls, and so put your Linen into it, and as often as you take it out, which must be frequent, wring it, then having a Pot of fair Water ready heated with Alum dissolved in it, put the Linen well wrung into it, and so rub it over at the taking out, and dry it; but if you would have it the darker Colour; then it is requisite to have a Ley made with Lime-Stones, or unslaked Chalk, &c.

To dye Velvet, or other things requiring it, the most Curious of Blacks. Take of Galls two Pound, Coperashalf a Pound, Smiths Water a Gallon, the Powder of burnt ivory an Ounce, and of Oak bark, and Shooe-makers Black ground to Powder, the like quantity, and two Gallons of fair Water, mix them well together, and suffer them to stand in the Sun or some other warm place for the space of thirty Days, with often stirring about; then put your Materials therein, and as often as you dip, hang them to dry, and your expectation will be answered.

To make Bran Water much used in Dying, &c. Take half a Peck of Wheat Bran, and two Gallons of fair Water, set them on the Fire, giving them a gentle heat, which being done, put half a Pound of Alum Powder into it, and suffer it to stand a Week or more, with sometimes stirring it about before you use it.

To dye Wool or Woollen Yarn. Take four Pound of Wooll
or

or Yarn, two Pound of Woad, putting the Woad into a Kettle to two Gallons of Water ; then throw in two hand-fuls of Wood-Ashes, and when it seetheth, put your Wooll or Yarn into it, and ler it remain there about half an Hour, at what time take it out and wring it and put it in again, and let it seeth as long as before ; and then if it be before a brown Blue, it will be a Dark Green, or if it was White, it will be a Yellowish Colour. And thus much at present, in Relation to Colours for Dying Silks, Cloth, &c.

C H A P. II.

The most Curious Art and Method of Colouring Skins, or any Pieces or Parcels of Leather or Bristles ; as also of Gilding Leather with Gold, laying with Silver or Lacquering, &c.

To Colour Skins Green.

TAKE the Leaves of Night-shade, bruise them in a Mortar, strain out the juice, and dissolve in a Pint two Ounces of Alum, add half an Ounce of Verdigrease, and heat them gently over the Fire, and then suffering it to stand for twenty four Hours, strike over the Skin with it warm, and suffering it to dry, do it again till it has taken the Colour, which will be very lively.

To Colour Black Leather after the Order in Germany, &c. Take of the Bark of Elder two Pounds, of the Filings or Rust of Iron the like quantity, put to them two Gallons of Rain-water, and stop them up close in a Cask or other Vessel, and so suffer them to stand for the space of two Months ; then put to the liquid part a Pound of Nut galls beaten to Powder, and a quarter of a Pound of Coperas, heating them over the Fire, and suffering them to stand twenty four Hours after, and so use them with a Brush, till the Skin has taken an Excellent Black.

To Colour White Leather the best way. Having hung your Skins in Chalk, or Lime-Water till they are grown supple, that the Hair or Wool may be stripp'd off, stretch them on Tenters or by Lines, and smooth them over; then take your Colouring mixed, according to the Purport of what you intend they shall take, and having first brushed them over with Alum-Water very warm, give them the Tincture, and dry them in the Sun or in some warm house, and they will be usefull on sundry Occasions, without any further trouble.

To make White Leather Blue. Take the Berries of Elder a Quart, strain out the Juice and boil it with an Ounce of the Powder of Alum, and half an Ounce of Indico, or smalt Blue, and brush over the Leather with a fine Brush dipped therein three or four times, suffering it to dry between whites, and the Business will be Effectuated.

To Colour Leather a fair Red. Having rubbed your Leather well with Alum-Water or Alumed it, take stale Urine, seeth it and scum it till half be wasted; put then to it an Ounce of the finest Lake, with the like quantity of Braziel in Powder, an Ounce of Alum, and half an Ounce of Sal-armoniac, mix them well and keep them stirring over a gentle Fire about two Hours, and so use the liquid part, and your expectation will be answered.

To Colour your Leather a Curious French Yellow. Take one part of Chalk, and another of Wood Ashes, and make thereof a good Ley; then strain out the fine or Liquid Matter, put it into a Vessel over the Fire, and put into it Turmeric in Powder, and a little quantity of Saffron, and so suffer it to simmer, till it becomes pretty thick; then set it to cooling, and as you have occasion use it, as before mentioned.

To colour Spanish Leather, &c. Take that which the Dutch call Pömpelmelch, warm it, and rub the Leather therewith, then take of Venistot Appelen, and having beaten it small, put a considerable quantity of fair water to it, and let it soften over a gentle Fire, then press out the water, and so in the liquid part rub or wash the Skin, doing it so often; and after that, take Shooe-makers black the finest, and rub over the Skin with it, having in the wetting added to it

it a little Vitriol or Coperas, and suffering it to dry, take Goose or Hogs-grease in a Woollen Cloth; and rub the Skin over for a good space, where there is a good Fire to supple it in; and then rub it over with your hands, till it disappear, or instead of Grease, Line-seed, or train-Oil may be used, and so in case of any other Colour, according as the Colours are designed.

To dye Bristles a curious Red for Brushes. Take an ounce of Brazil-Wood in Powder, half an ounce of Alum, a quarter of an ounce of Vermilion, and a pint of Vinegar, boil them up to a moderate thickness, and dip the Bristles in when it is very hot, suffering them to continue for some time in the Liquor, and they will be of a curious Red.

To dye Bristles or Feathers a curious green, &c. Take of Verdigrease an ounce, Verditer the like quantity, Gum-water a pint, mix them well together, and dip the Bristles or Feathers, they having been first soaked in hot water, into the said mixture,

To dye Bristles or Feathers blue. Take an ounce of Indico, as much of Bisse, as much Alum as a Hazel-nut, put them into Gum-water, and dip the Materials into it hot, hang them up to dry, and clap them well, that they may open. And so changing the Colours, you may in this manner dye the aforesaid materials of any Colour, as for black use Logwood and Galls, for purple, Lake and Indico; for Carnation, Vermilion and Smalt; for yellow, Berries and Saffron with a little Tartar mingled or dissolved in your Gum-water.

To dye Ivory, Bone, or Horn a curious Red. Take the Materials and soften them in water wherein Tartar has been dissolved; then take Vermilion and Brazil, temper them well in water, boil them up in a Liquor, and put your Horn, Ivory, or Bone into it, and suffer either of them to be there, it being hot, for a convenient time, and taking them instantly out cast them into cold Alum-water; and if they have not taken the Tincture at first, use them in the like manner a second time, and so proportioning the Colours, you may in this manner proceed to make them take what Colour you please.

To marble Books or Paper the best way, Take four ounces of Gum-Arabick, dissolve it in two quarts of fair Water; then provide several Colours mixed with water, in pots or shells, and with peculiar pencils to every Colour, sprinkle them by way of inter-mixture upon the Gum-water, which must be in a Trough, or some broad Vessel; then with a stick curl them and draw them out in streaks, to as much variety as may be; which done, hold your Book or Books close together, and only dip the Edges in on the top of the water, and Colours, very lightly; which done, take them off, and the plain Impression of the Colours in mixture will be upon the Leaves, doing as well the ends as the Front of the Book in like manner: and in this case, you may do paper by dipping it on the flat, as also Linen Cloth, &c.

To dye or Colour Horse Hair, or any hair, &c. steep in water wherein a small quantity of turpentine has been boiled for the space of two hours; then having prepared your Colours very hot, boil the Hair therein, and any Colour, black excepted, will take, but that will only take a dark red or dark blue, &c. And after this manner with Colours cold or but luke warm, you may dye the Feathers upon the backs of Poultry, wild fowl, hair on Dogs, Horses, or the like, in as much varieties as your Fancy can suggest.

Another fair Red for Skins, &c. Wet your Skins or Fells in Alum water, in which has been dissolved a like quantity of Salt with half as much Lime, when being again stretched and dried, take the last of Brewers drink a quart, put into it an ounce of Brazil Powder, a quarter of an ounce of Vermilion, and an ounce of Alum-powder, thicken them over a gentle Fire by continual stirring, and so with a brush or Coth, rub over the Skins at an evenness, not laying it thicker on one place than another, and so do 3 times successively, suffering them only to dry the mean while, and your expectation will be answered.

To dye Skins a crimson Colour, &c. Scrape hard soap three ounces, and dissolve it in fair water, and add to that three ounces of Alum, boil them over a gentle Fire; till the water grow clammy, or a little inclining to thickish; then put in a few grains of Cochinele, half an ounce of Lake, two ounces of Red lead, and a quarter of an ounce of

of Vermilion, and a small piece of Indico, mix them well by stirring them together, and keep them upon a gentle Fire, till they are about the thickness of the white of an Egg; then having first rubbed your Skin over with Alum-water, and suffered it to dry, apply this Colour, as has been directed in the former.

To Colour Skins a light blue or Turkey Colour. Take Smalt 2 ounces, red wine a quarter of a Pint, Alum two ounces, Vinegar half a Pint, and white starch half an ounce, put them over a gentle Fire, not suffering them to become over thick; and then soaking the Skins with Alum-water, and suffering them to dry as usually, add to this Colouring half a pint of Gum-water tolerably thick; and lay it on, glazing it over when dry with a polisher.

To Colour a light green. Take the Herb called Horse Tail, bruise it, and add to the juice a small quantity of Verdigrease, Alum and Coperas, and over a gentle Fire, make it into a Colour; which will prove very pleasant and delightful.

To dress, or cover Leather with Silver or Gold. Take that which is called brown Red, and grind, or move it on a Stone with a Muller, adding Water and Chalk, the latter being dissolved, and with it rub, or lightly dawb the Skins over, till they look a little whitish; and then, before they are quite dry, lay on your Leaf-Silver or Gold, placing the Leaves a little over each other, that no Intermision be found; and when they have well closed with the Leather, and are sufficiently dried on, rub them over with a polisher made of smooth Ivory, or of a Horses Fore-tooth, and you will perceive it very splendid.

Another way of gilding Leather more lasting than the former, viz. Take Glee made or consisting of the whites of Eggs, or you may for want of the former make Gum water, and with a brush run over the Leather with either of them, which done, lay on your Gold or Silver, and burnish it over as the former.

To make Leather shine without any Gold, &c. Take whites of Eggs, Gum-water, and Powder of Antimony, mix them well together, by beating, and having your Skins well dried lay the mixture on them, and do it often, till the Leather be quite hid, which done, let the mixture dry; and then

bunish them over; and for want of Antimony, you may use black Lead,

C H A P. III.

How to recover faded Colours in Cloth or Silk, to take Spots, Stains, Pitch, Tar, Rosin, Grease, Wax, Oil, &c. out of Silks, Stuffs, Woollen or Linen, to preserve them from Damage of Worms, Moths, &c. and other matters, &c

To make Cloth that has lost its Colour recover it and look fresh and bright.

TAKE of unquenched Lime two ounces, of the Ashes of the Bark of Oak, the like quantity, and put them into a quart of fair Water, mixing them well, and suffering a settlement for the space of an hour, drawing off the clear part, and therewith wash or carry over with a hard brush the Cloth, and by twice or thrice carrying it over, it will look fair and bright.

To wash Scarlet that is soiled or greasie. Take two ounces of white Tartar, beat it finely, and heat it over a Fire in a pint of fair water, till it be thoroughly dissolved and very hot, then suffering it to cool a little, take an indifferent hard brush, and dip into it, rubbing it lightly over with the same, and by so doing in a short time it will return to its first Estate and Colour.

To restore Silks of any Colour in the like nature as the former. Take an ounce of unslaked Lime, and the like quantity of the Ashes of Vine Branches, and as much Oak-Bark, mix them well together in fair water, and make a kind of a Ley with them over a gentle Fire; which being settled, take the clear part, and with a brush or sponge rub over the faded part, and it will in a short time restore it.

To make a Soap to take Grease, Spots, or Stains out of Cloth,

Cloth, Stuffs, Silks, &c. Take a Pound of Roch-Alum, burn it well, and beat it into Powder, add to it the Powder of the roots of Florence-flame, an Herb so called, about half a Pound, and to these add a new laid Egg, and two pound and a half of Cake Soap, makethem up with fair water into round balls; and when you are desirous to take out any Spot or Stain, wash well the place first with warm water, and then lay a laying of this Soap upon it for three or four hours; and then wash it off with other warm water, and in often so doing they will disappear.

Another excellent and approved way. Take Wood-Sorrel and distil it in an Alimbeck with Fumitory, and wash the damaged place therewith, and it will in frequently so doing restore it.

A way to take Spots out of Linen or Woollen if Coloured. Take of the juice of a Limon, two spoonfulls, one spoonfull of the Juice of an Onion, and warm them over the Fire, and with them often wash the Spots, and they will no more appear.

How to make a good Ley to take out Spots and Stains, viz. Put into three Pints of Water half a Pound of Soap-boilers Ashes, and suffer them with daily stirring, to remain in it for the space of four days, then pour off the clear water; then mix it, as you see convenient with Fullers Earth, and lay it hot on the place, and it will with often using effect your desire.

A very good way to take Spots of Oil out of Cloth. Take Oil of Tartar, and mixing it with the Powder of a burnt bone, apply it to the spot, and hold over or upon it a spoon wherein is a live coal, and the heat thereof will attract the grease and render the spot invisible.

To take Pitch, Tar, Rosin or Bees wax out of any Stuff, Silk or Cloth. Take Oil of Turpentine, warm it a little and apply it to the place, suffering it to soak in for the space of an hour; and then gently rub it, and you will perceive the Rosin, &c. loosened and instantly to crumble away.

A Soap water to take any manner of spots, how to make it. Boil Straw-berries, or the Leaves thereof in a quart of fair water, and a Pint of Vinegar; then add two Pounds of

Castell Soap, and half a Pound of Chalk, finely scraped, boil them till the moisture is consumed, and when you have Occasion, wet the place with sharp Vinegar, and rub it over with this Soap, drying it afterward against a Fire or in the Sun.

A speedy way to take all manner of spots, or Stains, out of Scarlet or out of Velvet, of what Colour soever, not changing it. Take Soap-wort, an Herb so called, strain out the Juice, it being bruised, add to the Juice a small quantity of black Soap, if the Scarlet be not dyed in clear grain, and these being made thin, wash the place with the liquid part, suffering it to dry between whiles, and by this means in a day or two, you will perceive the Spots to disappear.

To take Iron Moulds or Stains out of Linen. Take the Juice of a Limon, warm it with a little Powder of Alum dissolved in it, wet it, and as it is wet, dry it with a spoon, wherein is a live coal, and so continue to do for the space of two hours, and the Spot or Iron-mould in a washing or two will disappear. This likewise will take out Spots of Ink, &c.

To take out oily Spots out of parchment or oily Paper the manner. Take the Powder of burnt Bone, finely sifted, and place between two boards, pressing it hard, some of the Powder on either side the Spot, and in two days it will be quite vanished.

An excellent way to take Spots or Stains out of Linen, viz. Take fair water, and dissolve it in Bay-salt, and steep the Linen therein; then take juice of Sorrel and sharp Vinegar, and rub the Spot with them; suffering it likewise to soak it in, and in often so doing it will disappear.

To take away Ink-Stains, Stains with Fruit, &c. Take the powder of Alum half an ounce, the juice of Housleek or Sengreen two ounces, and apply them, the Alum being dissolved very hot, and the business will be effected.

Instructions how to keep Silks from staining in the washing. Heat rain-water, and when it is very hot, put into it castell Soap, dissolve it well; then suffer it to be almost cold. after which, sprinkle in a small quantity of fullers Earth, and so scowre out your Silks; then suffer them not
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to lie on heaps, but spread them, and clap them between dry Cloaths, and they will be fresh and fair.

Directions to keep Linen layed up without using, from Damage for many Years Having washed, and well dried your Linen in the Sun, fold it up, and scatter in the folding the Powder of Cedar-wood or Cedar small ground, having first perfumed your Chest with Storax ; by which means, not only dampness is prevented, but Worms or Moths, &c.

Further Directions, to keep Woollen or Linen Sweet and Pleasant, as likewise from being damaged by Moths, Worms, &c. Take Orange Peels, dry them in an Oven, and beat them to Powder, add to that Powder of Elicampane Roots, the Powder of Arras, and that of Juniper, and air your Cloaths when you lay them up, over a Fire wherein Bay-leaves are cast and burnt.

A Pleasant Water to preserve Linen or any other thing a long time, giving it moreover a Curious Scent. Take of Spike-flowers two Pound, Costmary one Pound, Balm an handful, Penny-royal as much, Mace two Ounces, Arras Powder an Ounce, loak these in White-wine, and distill them, and sprinkle your Cloaths in a fair day, suffering them afterwards to dry, and then lay them up.

A good way to wash any Linen or Woollen interwoven with Gold or Silver, and not to impair it. Dip the part you design to favour in Urine and Alum, and suffer it well to be soaked ; then soap the rest, but not that place, and having washed it, hang it to dry in the shade, and your Expectation will be answered.

To remove Stains occasioned by Wine or Vinegar. Take new Milk, and steep the thing stained therein a Night ; then take Runnet, and apply to the Stain, rubbing it in ; and by so doing twice or thrice, you will find it fair as at first.

To make Linen that is turned Yellow, very White. Heat Milk over the Fire, and add to a Gallon a Pound of Cake Soap scraped in, so that it may dissolve, and when the Cloaths have boiled therein, take them out, and clap them into a Lather of hot water, and wash them out speedily.

To whiten Cloth the best way. Take your Cloth, and buck it well ; then spread it upon the Grass, and sprinkle it with Alum-water, suffering it to continue abroad for 3

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or four days ; then buck it again with Soap and fullers Earth, and use it as before, and so it will be both thick and white.

To make Salt Water Potable. Take a Vessel of Wax hollow and empty, and dip it into the Sea, the Water that gets in by the Pores of the Wax will be drinkable. Set an Earthen Pot not baked, if the mouth be close stoppt, will Purifie the Water, its done more speedily and plentifully. Put Fresh Water Sand into Salt Water, and stay a while, putting a Linen Cloth before the mouth of the Vessel under that which must receive it. It will be strained through, and will be Fresh, having lost all its Saltness. *Wicker.*

C H A P. IV.

Directions to scowre Silver and Gold Lace, make Plate bright, and look like new, take Spots and Stains out of it, to diaper Linen, whiten Ivory, make Cement for broken Glasses, &c. Perfumes of divers kinds, Musk-balls, and many other things and matters, &c.

To scowre Silver and Gold Lace, and to restore it to its first Lustre, as also Imboss, or Imbroidery.

TAKE the Lace, and lay it as smooth as may be upon a dry Woollen Cloth ; then burn Alum, and beat it to Powder, sifting it afterwards through a very fine Sieve ; then with a Brush rub it gently over the Lace, and by so doing, and often turning it, the business will come to Perfection. And thus,

To scowre, and take Stains out of any Silver Plate, &c. Steep your Plate in Soap-leys for the space of four Hours ; then run it over with Whiting wet with Vinegar, so that it may stick thick upon it, and dry it by a Fire ; after which,

which, rub off the Whiting, and pass it over with dry Bran, and the Spots will not only disappear, but it will look exceeding bright.

To boil up Plate, that it may look like New. Take of un-slaked Lime a Pound, of Alum the like quantity, Aqua vitæ and Vinegar of each a Pint, and of Beer grounds two quarts, boil the Plate in these, and they will set a curious Gloss upon it.

To make any Linen at the first appearance look like Diaper. Take it when new washed, spread it upon a Table somewhat damp, and sprinkle it over with a Brush dipped in Alum and Rose-water, in form and manner, as best shall suit with your Fancy.

To whiten any piece of Ivory, that is turned yellow, as also Bone, &c. Take a Pound of Quick-lime beat small, and place it on the Ivory, till it be covered; then pour gently, and by degrees Vinegar thereon, and so suffering it to lye for the space of twenty four hours, take it out, and rub it with Alum-Powder, and the first whiteness will be restored: and in the like manner Bone may be used and ordered.

To Cement broken Glass, or China Ware a good way. Take the whites of two Eggs, half an Ounce of Quick-lime beaten to Powder, a dram of the Powder of burnt Flint, and the like quantity of Gum-sandricks, temper them well together, and add for the better moistening a little Lime-juice; then with a Feather anoint the edges of the broken Vessels, and clap the pieces together by a warm Fire, and if your hand be light and steady in the Performance, the Fracture will hardly be discerned.

To remove Spots and Stains out of very thin Silks, &c. Take White-wine Vinegar a Pint, make it indifferent warm, then dip a black Cloth into it, and rub over the Stains; then scrape Fullers-Earth on it, and clapping dry Woollen Cloaths above and beneath, place an Iron indifferently hot on the upper, and it will draw out the Spot, &c.

To make an excellent Perfume preventing pestilential Airs, &c. Take Benjamin half an Ounce, Storax the like quantity, as much of Galbanum, temper them being bruised into Powder with the Oil of Myrrh, and burn them in a Chafin.

Chafing-dish, or for want of these, take Rosemary, Bawm and Bay-leaves, heat them in Wine and Sugar, and suffering the moisture to consume, let them likewise burn by the heat of the pan, and they will cast a curious Scent.

To Perfume Cloaths. Take the best Cloves an Ounce, dry them in an Oven, and beat them to Powder, do the same by a like quantity of the Wood of Rheubarb and Cedar, and sprinkle them in your Box or Chest, and they will not only cast a curious Scent, but likewise preserve them against Worms and Moths.

A curious Scent, or Perfume, to carry with one, when going abroad in damp Airs, or to visit sick or infected Persons, and is wonderful good for all Pains in the head. Take Orange-flower Butter an Ounce, Oil of Nutmeg, a quarter of an Ounce, Amber-grease a dram and Civet a scruple, mix them well together, and carry a small box of it about you, smelling to it as you have occasion.

To make a sweet scented Powder very Pleasant. Take Rice-grounds, and the small of white Starch a like quantity, pound them in a Mortar, and sift them well through a Fine Sieve, dry the dust in an Oven or before the Fire; then infuse to each Pound a grain of Civet, and half an Ounce of Rose scent, and keep it close looped up, till it be well infused; and then use it for your Hair, or otherways at your discretion.

To make scented Wash-balls the best way to keep, &c. Take Casteel Soap, scrape it into new Milk, and heat it over the Fire, till it melt and again become thick, then put a small quantity of Amber-grease, Lavender cotten flowers beaten, and dried, till they are as fine as Meal, and a little Spirit of Cloves or Cinamon, and so make them up into Balls, and lay them a drying in a warm place, but not in the Sun.

A Perfume to drive Vermine out of a House, &c. Take Burgundia-Pitch an Ounce, Brimstone half an Ounce, Storax the like quantity, the powder of Mother Amber a dram, beat and mix them well together, and burn them upon a Chafing-dish, and where the scent comes, the Mice and Rats will fly with much speed to avoid it.

An Ointment or Perfume to remove an evil scent that has tainted

tainted the Brain, &c. Take of the Oil of Bay berries, half an Ounce, of the Powder of Frankincense a dram; the Oil of Mace, or Spirit, a scruple, as much of the Oil of Turpentine, mix them well together, and keep them in an Essence Bottle.

An Essence that will immediately Perfume the Place, how to make it. Take Cinamon an Ounce, Camphora half an Ounce, Opopanax a dram, Roses clean picked a handful, Rue and Rosemary Flowers the like quantity, the Gum of Myrrh a dram, bruise them well, and put them into a small Alembick or Glass retort, and take the Essential part in a Bottle, stopping it close, unless when occasion requires it, and then by opening it, you will suddenly find the Effects answer your Expectation.

CHAP. V.

The curious Art of Drawing in all its Perfection, as well humane Bodies, as Birds, Beasts, Fish, Landskips, Building, and many other rare Portraits, by plain and easie Rules, in due proportion and manner.

Seeing Limning or Drawing is an Art very curious, much admired, and sought after in all Ages, and especially in the present, I have thought it convenient to lay down Methods and Rules for the Instruction of Learners especially, thereby to enable them for greater acquisitions, &c.

The first Material thing to be known, is, the necessary Instruments requisite to be used on this occasion, which are first Sallow-coals, or Sallow-wood burnt to a Char-coal, that it may be sharpened in the form of a Pencil, to touch over lightly the first draught. Secondly the out Feathers of a Duck's Wing, to wipe off, as you see occasion, what
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is superfluous, or the matter designed to be altered. Thirdly, black lead Pencils well pointed to go over your draught the second time. Fourthly, Pens made of Ravens or Crows Quills, to finish the design, by giving a more curious piece. Fifthly, a rule and a pair of Compasses with three points to take in and out at pleasure, the one for black Lead, the other for white Chalk or Red, or any other paste, and the use of the Compass is to be observed in most Drawings, to mark out the equal distances after your out-stroakes are drawn.

Having the forementioned things in a readiness proceed to Practice, and in the first part begin with a plain Geometrical Figure, such as are found to be the Circle, Oval, square, cone, Cylinder, Triangle, which accordingly you may mark out with your Rule and Compass, till you can readily do it without them, for a Circle well carried will much avail you in any orbicular Form, as the Sun, Moon, Globe of the World, &c. The Oval is a direction for the Mouth, Face, the Foot of a Wine or Beer Glass, &c. The Square is very useful in confining the Picture you are to copy. The Triangle wonderfully assists you in making half a Face. The Cone will assist you in Drawing Colosses, Spires of Steeples, and the like. The Cylinder assists you in Drawing Pillars, Pilasters, Columns, together with their Ornaments proper to Architecture, &c.

Having considered the matters premised, proceed to draw Pears, Cherries, Apples, Apricocks, Peaches, Grapes, Straw-berries, Pease-cods, but Terfles and other Insects with Flowers and Branches of Trees in their proportion, and being a little perfect at these, proceed to the third practice, which is usually imitating Beasts. As

1. Those that are more heavy and dull, *viz.* The Elephant, the Bear, Cow, Ox or Bull, and sometimes Sheep and Goats; then those more nimble and fleet, as the Horse, Stag, Hart, Unicorn, Tyger, Lyon, &c. And for Birds, practise the Eagle, the Swan, the Kings-Fisher, the Parrot, the Partridge, the Pheasant, and such like; then again, for Fish, the Whale, Salmon, Pike, Carp, Herring, Mackrill, Lobster, and such other Fishes, as are most in use, to adorn a Chimney-piece, or any the like matter on business

business, and from these, proceed to Mellions, Pumpkins, Ears of Corn, Cucumers, Parsnips, Carrots, Cabbages, &c. when having practised your hand in their proportion, and knowing the proper Colours, of which I shall treat hereafter, you may easily form and illustrate them, though the Excellency of this Art consists in Drawing a humane Body to the Life: And because it ought not rashly to be all drawn at once, I shall proceed to these in order, especially as to the Rules in general.

CH A P. VI.

To draw the Face in divers Postures and Proportions, the most exact Rules, and what of Variety is to be considered therein.

For Drawing the Face, general Rules, &c.

IN this case curiously observe the face in its motion, whether upward, forward, downward, or sideways, touching lightly the features, where the Eyes, Nose, Mouth, and Chin ought to stand; then more perfectly go over them, for the Circles, Squares and Triangles, that are used in this matter, may serve well enough, to guide your Judgment where to place them. And in this case, observe diligently the principal Muscles of a Face, appearing most in aged Men or Women. And there is usual a threefold Proportion observed in a Face, as first from the top of the Fore-head to the Eye-brows. Secondly, from the Brows to the bottom of the Nose, and Thirdly, from thence to the bottom of the Chin, but in some the Fore-head is lower, and in others the Nose longer.

The distances between the Eyes consist in a full Face of the length of one Eye, but in a three quarter, or side-face, that distance is lessened answerable to the proportion. As for the Nostril, it ought to be exactly placed

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against the Corner of the Eye. And in a fat face, you will perceive the cheeks to swell, when on the contrary, in a lean face, the Jaw-Bones stick out, and the cheeks fall in.

You may discern a smiling countenance, by perceiving the corners of the mouth to turn up a little, and a frowning or fowre countenance, by the Foreheads bending and some what wrinkling on the top of the Nose.

To draw a fore right Face, make the form of a perfect Oval, divided into three equal parts, by two Lines. In the first part place the Eyes: In the Second, the Nostrils: And in the Third, the Mouth, observing to keep the Eyes distant from each other, the length of one Eye, and that their inward corners be perfectly over the outside of the Nostrils.

To draw an upright head, it must be made equal with three Lines, every way either upward, downward, higher or lower, and that must, as the former, be divided into three equal parts.

To draw the Inclining, or fore-shortened face, observe, how the Lines concord or agree together, and with ease you may draw, in their proper places, the Nose, Mouth and other parts, with a little Practice, and in these forms it is requisite that you are very perfect as being rules of frequent use; for of the many Parts of Man's Body, the face is most difficult; but having got the true proportion, with your measures, you will be capable, let the Face turn which way it will, to form it; and further note, that whatsoever proportion the Face you are to imitate bears, your out-stroaks must be formed accordingly.

As for the Nose, it requires to its due proportion much care and diligence, as being the most eminent part of the Face; in which, especially, observe the hollowness, roundness, and indenting of the Nostrils, &c.

The next thing, especially where the body is to be covered, is to be considered of the Hands, in their several postures and positions, as well by measure, as without, as also Hands and Arms, of whose postures, as well as the former, it would not be unnecessary for the Learner, to get draughts for his better imitation, which may be had at most Picture Shops, for a small matter, ready done.

When you have practised, and are a little expert in drawing

drawing the Hands and Arms, &c. proceed to the drawing of Feet in their several Postures, as well without, as with measure ; which having attained separate, exercise your skill in drawing Legs and Feet conjunct or joined together, that so understanding the frame and particulars of the whole Body, you may be the better understanding in drawing the Figures in their due proportion and right Postures, in doing which there is no small difficulty. And in this manner, having proceeded to form the Members, draw the other parts of the Body, as the Shoulders, Back, Breast, Belly, Secrets, Thighs, and the like, and lastly take care in due proportion to join them, that they may appear firm and compleat.

Coming to practise upon an entire Body the best way is to begin with those of Children ; and my reason is, because they are generally fat and plump, and rounder than the Bodies of Men and Women, and consequently require so much curiosity in the Observation of Muscles and other Features, which render the drawing less difficult.

As for your further Direction in drawing, Observe ever to begin at the Head, and so proceed by degrees, running the whole lightly over at the first, and encreasing more fully, as you see occasion, ever being careful to take notice, that your parallel Joints, Muscles, Sinews, &c. be rightly proportioned, and exactly opposite ; also that the motions of the Body be answerable to each other, and that the Parts and Limbs have a due Symmetry, not being faulty in the indecency of having one great Arm or Leg, and another small one, nor a great Finger upon a small Hand, neither further than the proportion requires, suffer one Limb, or Member to be longer than another ; and although it so happen, which it frequently does, that at first you commit Errors of this nature, yet be not discouraged for frequent practice will redress them.

Having thus far proceeded with Success, and being indifferent perfect herein, you must consider what it is to shadow, and in this case observe the following Rules, viz.

The out-Lines of the draught of any Picture, give the symmetry or proportion, which ought to be sufficient to a good Judgment, but the Lines and Shadows produce to

the less curious, the lively likenesses in Shadowing; therefore of any Picture, you must take notice to cast your shadow always one way, *viz.* on which side soever you begin to shadow your Figure, whether on the right or left Hand, as in the Figure of a Man, if you first proceed to shadow his left Cheek, the left side of his Neck, Body, and all other parts must be shadowed, unless the light side of the Figure be dark, by reason of some other Body standing between the Light and it, as suppose three Men were standing together; then must the Body, or Figure in the middle be darkened by the foremost, unless the light by facing it come between them.

Further, Note, that all shadows must consequently grow fainter, as they are further removed from the opacous Body from whence they proceed. But in case of Storms, where Clouds, or Waves, by contending Winds are driven one against another, contrary shadows are allowed, as striving for Superiority, and so you must be sure to supply the greatest first, and according to your Judgment, supply from them the lesser.

All circular Bodies must have a circular shadow, as they have a circular form, and as the object of Light which causeth the shadow is circular.

And now for your further Information of this kind, observe that a Man standing from the top of the Head, to the bottom of the Feet, is in due proportion eight times the length of the Head. The Arm when it hangeth straight down, reacheth within a span of the Knee; the Hand must be the length of the Face, and spread broad, must cover it, and no more; and further note, that in Drawing a Figure standing, you must in the first place draw that Leg, which the Body stands firm upon, or else your Figure will undecently decline one way more than another, as if it were falling. The Arms of a Man extended are his full length; and so of a Woman in the various particulars. Thus having directed you in the Drawing and Proportioning Naked Figures, I now proceed to give Directions about Garments, &c.

As in Naked Figures, it is observed you draw the outlines first; so you must do in Drapery or Cloathing, leaving

ving space within for your greater or lesser Folds ; then first draw the greater Folds, and break them into lesser contained within them, and the closer the Garment fits to the Body, the narrower and smaller must be the Folds, and in shadowing, the innermost must be the harder, and the outermost softer.

Continue always throughout your Garment the great Folds, but as for the lesser, break them off, as you see convenient, and the finer your Drapery is, the fuller, and sharper must your Folds be, and the shadow the stronger, yet more pleasant to the Eye, ever taking notice, that that part of any Garment that fits close, as the Body, Coat of a Man, the Breasts of a Woman, and the like, must not at all be folded, but rather with a sweet shadow represent that part of the Body, that the Garment appears to cover, as Woman's Breasts, with a sweet round shadow, &c. And thus much for the Body of Man in Drawing.

C H A P. VII. ❖

Land-skips, what they are, and what is required in the Drawing, and Curious proportioning them Pleasant to the Eye of Fancy, &c.

A Landskip is that which giveth a Pleasant Prospect of Trees, Hills, Rivers, Cattel, and other Rural Delights, with Towns, Cities, Castles, Promontories, Rocks, Ships, Boats, Barges, and whatever the Fancy of that kind can form. To express which, and make all truly appear naturally, as they ought, according to the true proportion and distance, observe in every Landskip, to make a very fair Horizon appear, the Sky either clear, or over-cast with Clouds, expressing the Rising or Setting of the Sun, to issue as it were from or over some Hill, Mountain or Rock ; but in a fair Landskip, beware you express not the Moon or Stars, which are only to be seen in a

Night-piece; and in case, such a piece be required, you may draw an Astronomer with his Quadrate, taking the height of the Moon, another with his Cross-staff, taking the distance of certain Stars, some standing with a dark Lanthorn far from them, to give them knowledge of their Degrees, an Owl flying in the Air, Men catching of Partridges with low Bells, a Woolf worrying of Sheep and the like, being natural to such Pieces.

If in any fair Landskip you express the Light of the Sun, ever observe, that throughout your whole Piece, you cast the Light of your Trees, Buildings, Rocks, Ruins, and all things mentioned, or express'd within the Work, thitherward: observe further to lessen your Bodies proportionably, according to the nearness, or distance they should naturally appear, so that the further the Landskip goeth from your Eye, the fainter you must express any thing seen at a distance, till at last the Earth or Water, and Sky, seem to meet, as do the Colours in a Rainbow, wherefore when at any time you see good Pieces of this kind, take your Observation more particularly from them, and imprint the Fancy, as well as may be in your Mind.

C H A P. VIII.

The Curious and much Esteemed Science of Painting or Limning in Water Colours, and how exactly to proceed therein, either on Parchment, Glass, or Copper, with the mixture, and distinction of the sundry Colours, and other Rare Curiosities.

HAVING gone over that which we may properly term Limning, or as many will have it, Drawing; I now come to that Part, vulgarly known by the Appellation of Limning, viz. laying in water Colours the most curious of all, and much practised by Persons of the best Quality.

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To fit your self, and prepare for the Practice of this, you must have Gums of all sorts to make your waters as occasion requires; also a Marble flat Stone, a Muller, Colours of various sorts, liquid Gold and Silver, Size to lay Gold, &c. Parchment, of the finest Pencils of sundry sorts, Pots and Shells to put your Colours in.

To make your Gum-water take Gum-arabick, white, clear, or transparent, for that which is yellow, or of an Amber-Colour is insignificant; tie up a quantity in a rag, and hang it in fair water, till it be dissolved; then the water being stiff enough for your purpose, mix your Colours with it, always having two sorts to make a weaker or stronger, as the matter requires.

Gum-lake is a compound Gum made of whites of Eggs, finely beat, Honey, Gum of Ivy, strong Wort, &c. which being well mingled and beat together, they will run like Oil, and in the end harden, and this you may buy ready made, as the former, observing only, that it be clear and transparent.

As for the Colours, there are simply six, viz. White, Black, Red, Yellow, Green, and Blue, to which some add Browns, but they are generally compounded, and of either of these, there are several sorts, as these, viz. Blacks the best, are Burnt Ivory, Cherry-stones, Lamp-black. The Whites are Ceruss and white Lead. The Reds are Red Lead and Lake. The Blews are Indico, Ultramarine, Bisc-smalt. The Greens are Bisc, Sap-green, Pink, Cedar-green. The Yellows are English Oker and Masticote. The Browns are Umber, Collens-earth, *Spanish Brown*.

These (though there are others) are the Principal Colours in Limning; and therefore I chuse to speak of these only in this place, the others omitted, being fit only to Colour Pictures, or wash Maps, &c. and of these.

The Colours to be washed are Bisc-smalt, Cedar, Ultramarine, Masticote, and red Lead. The Sap-Green is only to be steeped, and the rest I have mentioned are to be washed and ground.

To wash Colours, you must put a quantity of the Colour intended into a clean earthen dish, and pour water thereto very clear, stirring the Colour and Water together, suffering

fering it to stand a while, and perceiving the Grease or Scum to rise, take it off, and pour out that Water, putting other Water to the Colour, &c. and so do, till the Water become clear, and the Colour at the bottom remain fine, then pour away the Water gently, and you will find the Colour sticking about the sides and edges of the dish, as also at the bottom, and if it so happen, that you can get an Ounce of Pure Colour out of a Pound (tho' the rest is serviceable for many uses) it is sufficient.

In steeping Sap-Green, you must put it only into fair Water, adding a fourth part of Alum-powder to raise the Colour, and at the end of twenty four Hours it will be a Curious Green.

As for the Colours that are to be washed and ground, take a small quantity of either, and put it into a clean shell, adding a drop or two of Gum-water, and work it about the sides of the shell with your Finger, suffering it there to stick, till it is dry; then draw over it your Finger, and if any come off, then you must add more Gum-water, but being dry, if it glitter or shine, it is a token there is too much Gum in it, which you must remedy, by tempering it up with fair Water only.

There are some Colours, as Umber and Lake, which parch and crack when they are dry, and therefore to bind them, you must temper them with fine Sugar-Candy dissolved in fair Water, and so you must do by other hard Colours subject to this defect.

To burn the Colour thereto appropriated, put them into a crucible, cover it with a Lid of Clay, and set it on a hot fire, and suffer it to be red hot, and when the Colour is cold, you may wash or grind it, as the Nature requires, but do neither before they be thoroughly burnt.

To grind the Colours I have directed so to be used, take a quantity of any of them, cleansed from dirt and filth, and laying it upon your Stone, bruise it a little with your Muller; and then with fair water grind it, till the Colour be very fine, then have in readiness a large chalk stone with troughs, or furrows in it, and pour your Colour into it, and there suffer it to remain till it be well dry, at what
time

time take it out, and reserve it in Papers, or Boxes for your use.

Of these six simple Colours, adding the Brown, many may be compounded for Faces of all Complexions, Garments, Land-skips, Buildings, Rivers, Birds, Fish, Beasts, &c. As thus,

To make a Violet Colour take Indico, white and Lake, and at Pleasure, you may, as you take more or less of a Colour, make it lighter, or darker.

Lead Colour, you may make of Indico, and white mixed and tempered together.

Make Flame Colour, or Colour for flaming Fire of Red Lead and Masticote heightened with White.

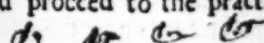
To make a Scarlet Colour, Take Red Lead, Lake, and a small quantity of Vermilion : For note, that the latter is not good in Limning.

To make a Light Green, take Pink, and Smalt, with White, to make it lighter as occasion requires.

To make a Purple Colour, take Indico, *Spanish* Brown, and White well tempered and heightened.

To make a Bay Colour, take only *Spanish*-Brown and White.

To make a Murrey Colour, take Lake and White.

Many other Colours are made by mixture, too tedious here to be recited; wherefore, I leave them to the discretion of the Practitioner, to mix them suitable to his Work or Fancy, and proceed to the practical part of this Curious Art, &c. 

C H A P. IX.

Instructions for the preparing your Tablets, and laying on your Colours in their graceful Shadows and Proportion, and what is to be observed, as to the Lines in the Face, Complexion, and Procedure in Drawing Curious, and many other Matters.

WHEN you have prepared your Colours, prepare likewise good Pencils, to know them, draw them wet through your Mouth, and if they come to a Hair, or sharp point, they are good, but if they after that stand rough, or hairs stare, or start out at the side, they are naught, and to be rejected.

The next thing is to prepare your Table; and in this case, get a fine Paste-board sleeked as smooth as a Card; then fine Parchment or Vellum, and starch it upon the Board, as smooth and even, that no wrinkle, or rising may appear; to perfect which, you must lay the Parchment side on your Stone rubbed very clean, and polish the contrary side, and so let it dry in the shade.

Having thus prepared a Table, as big as you intend your Picture, chuse a Light fair and large, free from shadow, being if possible a Sky-light on the top of a House, yet such a one, as the Sun-beams do not penetrate, or glance upon, observing to begin and end your Work by one and the same Light, keeping the Room Clean, that no dust may fly about to prejudice your Work.

The next thing to be considered is your manner of sitting; and in this case, let your Desk be so placed, that when you sit before it, your left Arm may be placed toward your light, and your right Arm from it, that your light may slant upon your work. And if you are to draw the Picture of any live Person, the posture being agreed upon, suffer him or her to sit above two Yards distant from you, and as level with you as may be, marking well, that when
soever

soever the Party moves, though never so little, for never so little motion of the Body or Face, if not recalled, may occasion in a short time many Errors, and when you undertake this, the following Materials are requisite to be near you, *viz*,

Two small dishes or sawcers with clean water, the one to wash your Pencils in when foul, and the other to temper your Colours withal; a Fine large Pencil to cleanse your work, called a Fitch-Pencil; a sharp-Pen-knife to take off Hairs, coming from your Pencil, or Spots that may fall upon your Card; a Paper having holes cut therein, to lay upon your Card, to cover it from dust, and to rest your Hand upon.

If your Carnation, or flesh Colour be tempered up, it must be somewhat lighter, than the Complexion of the Party you are to draw. If it be a fair Complexion, you must have white Lead and red Lead well tempered. If the Complexion be swarthy or brown, add to your white and red Lead, Masticot, or English Oker, or both, if occasion require it; but let the Complexion be what it will, be sure to temper your Flesh Colour lighter than the Party to be drawn; for if it be too sad, there is no remedy; and observe to place your Shadows distinct from each other in a large Shell: And note, that in all your Shadows you must use some white; wherefore in the first place, lay a considerable quantity of white by it self, over and above what the shadows are at first tempered withal. In the Second place, for red usual to the cheeks, and Lips, temper Lake, and red Lead. In the third place, for your blue shadows, as Veins, or under the Eyes, take Indico and white. In the fourth place, for your faintish green shadow, take English Oker, white, and Indico, or sometimes Masticot. In the fifth place, for a deep shadow, take white, and English Oker and Umber. Sixthly, for dark shadows, in the Faces of Men, take Lake and Pink, for they make an excellent fleshy Shadow. And these being the chief Shadows, I leave what may further occur of this kind to your discretion.

Having all things in readiness, the next thing you proceed to, is to draw the face, in doing which, take the following Method, *viz*. lay the ground, with the Colour
answerable

answerable to the Complexion of the Party ; and then begin the draught, the Party sitting. Now to finish a Face three Operations of sitting are required. At the first sitting, you must only lay the dead Colour. At the second, go over the Face more curiously, nearly observing whatsoever may conduce to the Grace, or Deformity of the Person to be drawn, considering it in a sweet dispose, and well couching the Colours one within another. And in this sitting, you perfect what only was rough before, by laying on the deep Colours, so that at the Third sitting, you may finish the Face, as in the Eyes, Eye-brows, Hair, and Ears, which things are the last work, and not to be perfected, till the Hair, Curtain, or Back side of the Picture, as also the Drapery be finished. And of these sittings in their Order.

The Operation of the first sitting, &c. Having laid your ground for the General Complexion, the next work must be to draw the out Lines, which you must effect with Lake and white mingled, drawing very faintly ; so that if you chance to miss your proportion you may alter it with a deeper mixture of the same Colour.

Having drawn the Proportion of the Face, add to the former Colour a small proportion of red Lead, tempering it faintly to the Colour of the Cheeks, and Lips, at the tips of the Chin, and Ears, about the Eyes, and the Roots of the Hair, placing the red shadows ; and as for the shadows, they must not be put in with the flat of the Pencil, but with small touches after the manner of hatching, and in this manner going over the Face, you will cover your ground with these and the like Shadows, and in these dead Colours, your curiosity need not be great, only strive to imitate Nature, as near as may be, for the roughness of the Colours may be mended at the Second Operation.

Having duly placed, and proportioned your red shadows ; in the next place, put in your faint blue shadows about the Corners of the Eyes, and Balls, &c and your greyish blue under the Eyes, and about the Temples, working them sweetly and faintly over by degrees, heightning the shadow, as the Light falls ; as likewise the hard shadows in the dark side of the Face under the Eye-brows,
Nose,

Nose, Chin, and Neck, with some stronger touches on those places, than on the light side of the Face, and so bring all your work together to an equal roundness, giving Perfection to no particular Part, at this time, but take a full view of your object; and consider, how near you hit the Life, not only in seeming likeness, but roundness, boldness of Posture, Colouring, and such like. And having by this time wrought your fainter shadows into the red shadows, you may venture to take a touch at the Hair, disposing it in such curls, folds, and forms, as you shall see convenient for Grace and Ornament, only drawing it with some Colour suitable to the Life, and fill up the empty space with Colours, deepening it somewhat more strongly, than before in the deepest shadowed places, and this may suffice for the First Operation.

The second Operation or sitting. In this sitting, the Party must take the same Place and Posture, as before; and then be Curious to delineate with your Pencil, the particular varieties of Nature, and as you drew them over but rudely before, you now must sweeten them with the same Colours, by working, and Driving them one into another; so that no rough edge, nor lump of Colour may appear, and this must be done, with a Pencil sharper than the former, by which means the Shadow may be soft and smooth.

Thus having done, proceed to the back-side of your Picture, and if there is a Curtain, as is the usual manner, be required, we will suppose it to be blue Sattin, and to do it, temper as much Bise in a Shell, as will cover a small Card, suffering it to be moist and well bound with Gum; then draw with your Pencil the out-lines of your Curtain, as also of your Picture, and so lay it over very thin, and airy with a large Pencil, that it may be the whole ground, you intend to do with Blue; and then lay it over again with a substantial body of the same Colour; in doing which, you must be swift, keeping your Colour moist, and not suffering any part to be dry till all be covered.

If it happen that your Curtain is to be Crimson, you must trace it out with Lake, and lay the ground with a thin Colour, observing where your strong Lights and Reflecti-

ons fall, there lay the Lights with a thin, and waterish Colour, and the Ground being yet wet, lay the strong and hard Shadows close by the other Lights, with a dark Colour temper'd reasonably thick.

Thus having layed your back-side, which in the same manner you may do with any Colour. Your next Work is, to lay your Linen of a fair White, and your Drapery flat with the Colour you intend it. Then take another view of the Face, and mark well what shadows are too light, or too deep, and endeavour to reduce each shadow to its due Perfection; then shadow the entrance into the Ear, and draw the Lines of the Eye-lid, the deepness of the Eye-brows, and all the most Eminent Notes and Marks in the Face, doing them with a very curious sharp Pencil, and then heighten the Hair, deepening it, as it appears in the Life, casting over the ground some loose Hairs, which will look very pleasant, and make the Picture seem to stand at some distance from the Curtain.

In the shadowing your Linen, which ought to be very curious, use Black, White, a little Yellow, and a small quantity of Blue. The Black being deepned with Ivory-Black; to which add a small quantity of Lake, or Indico: And thus much for the second Operation, from whence I proceed to the third and last.

The third Operation, &c. In this, only observe to give strong touches, where you see Cause, or find any Defect, taking more perfect Observations for the rounding of the Face, which at this sitting is better done than before, noting diligently, whatever may conduce to similitude, which is the Principal in the Work; as Scars, Moles, cast with the Eyes, Drawing the Mouth, &c.

In case of Ornaments, as Garments, &c. the ground being laid with Bisc; then the deepening must be Lake and Indico, the Lightning, White, very fine, faint and fair; and in the extreme light places, let what has been said of the Blue Drapery suffice, and may be understood of all other Colours; and for the greater Ornament, you may mix the Light with Gold, or Silver, &c.

If the Body is to be in Armour, lay liquid Silver for your ground, and when it is well dried and burnished, shadow

it with Silver, Umber, and Indico, and work the shadow upon the Silver, as the Life directs, &c.

For Gold Armour, lay liquid Gold for the ground, and shadow it with English Oker, Lake, and a mixture of Gold.

For Pearls, or that Colour, your ground must be Indico and White, and the shadow Pink, and Black.

For Diamonds, lay a ground of liquid Silver deepened with Ivory and Cherry-stone Black. And thus much for the Face, Body, &c. as to the laying in water Colour, and the next that present themselves are Landskips.

Directions for laying Landskips, &c. In this case, always begin with the Sun Beams and Sky, the lightest part first; and then the Yellow, which must be composed of Masti-cote, and White, the next your blue Skies with Smalt only leaving no part of your ground at first uncovered; but lay the Colours smooth all over, working the Sky downward toward the Horizon, still suffering it to grow faint, &c. as it draws nearer the Earth, and work the tops of Mountains, and other objects very remote, so faint, that they may appear, as lost in the Air, and as for your lowest and nearest ground, it must be an Earth Colour of dark Brown, inclining a little to Yellowish, and Green, as the matter requires, and the next a Lighter Green, and so successively, as they lose in their distance, you must abate their Colour, nor must you make any thing you see at a great distance, perfect, or absolute, what it really is; because it is altogether conjecture, you cannot absolutely discern it, but express it in Colours weakly, and faintly, as your Eye judges it may be. And ever observe in this case to place the light against the dark; and so consequently, the contrary, which is an excellent way, to extend the Prospect far off, yet do it so, as the Shadows may lose in their Proportion of distance, by Degrees, their Force, as they remove from the Eye; observing further, that the strongest shadow must ever be nearest. And thus much may suffice for Limning in water Colours, which if duly observed, and practised, will wonderfully help the Learner: And in this manner, you may paint upon Glass, by laying on the fairest Colours, if it appear through the Glass first;

but if otherwise, lay first a ground, and especially upon Copper.

CHAP. X.

Directions for the most Curious Painting, or Limning in Oil, with the various Colours, and Materials required on that occasion, with their manner of preparing, and ordering; as also Instructions to Paint to the Life, &c. wonderfully pleasing, and much profitable to be known, as well by the Gentry, and others, as those that intend it for their Profession.

AS this Noble Science, in all Ages, has been held in much Esteem, and Veneration among Men, in all Ages, it is now more especially coveted to be known, and Practised, by either Sex; wherefore for the better Instruction, especially of the Learner, I have thought fit to lay down the following plain, and easie Rules, which being well observed, and practised, may in time bring him to be a great Master in the Science. But first, of the Colours to be used on this occasion, without knowing which, the rest may prove ineffectual.

The Blacks are Lamp-black, Sea coal-black, Char-coal-black, Ivory-black, and Earth of Collen. The White white Lead only. The Greens, Verdegrease, Terra-vert, and Verditer, The Yellows are Pink, Masticote, Orpiment, Spruce Oker, English Oker. The Blues are Bise, Smalt, Indico, and Ultramarine. The Reds are Vermilion, Red Lead, Indian Red, Lake and Orno tto. The Colours indifferant are Spanish brown, burnt Spruce, and Umber.

These are the Principal Colours to be laid in Oil, and must for the greatest part of them be ground upon your flat stone with a Muller, with Line-seed Oil, though as for Ivory,

Ivory, Spruce, Oker, and Umber, they must be burnt before they are ground. And as for Masticote, Ultramarine, Verditer, Vermilion, Lamp-black, Smalt and Orpiment, you may temper them upon your Pallet with Oil, saving your self the labour of grinding, &c. and as for those, that are to be burnt, you must perform it in a Crucible, and though Line-seed Oil be common to all, yet in case with your White Lead, you are to lay Linen, you must mix it with Oil of Wall-nuts, by reason the other will in a short time turn Yellowish.

The next thing you are to take care of, is to have good Pencils of all sizes, a Pallet, or Board, to lay your Colours on, whilst you are using them, and an Eysil to lay your Cloth upon, or against, and a straining Frame, to which it must be nailed, and you must further have a Stay or Mollstick which is made of Braziel, or such Wood as will not easily bend, about a Yard long, at one end of which, tie a Ball of Cotton in a piece of Leather; so that holding it in your left hand against the Work, you may support your right Arm with it, whilst you are Working; and being thus furnished, you may proceed to the Work, &c. And first of the Complexion.

For a Fair Complexion. Take a small quantity of White, and twice as much Vermilion and Lake, temper these with the flat of a Knife's Blade upon your Pallet, or Hand-board, and use it for the deepest Carnation of the Face, adding moreover to a small part of it more White, and reserve that for a lighter Carnation. And yet another part being reserved, add more White to it, till it come to the lightest Colour in the Face: And then proceed to prepare the faint shadows, and in doing it.

Take Smalt, and mix it with a little White, which may conveniently serve for the Eyes; then laying aside the greatest quantity, add to the rest a little Pink, and these well tempered, will serve for the faint Greenish shadow in the Face; then proceed to prepare your deep shadows: And in order to it, take Lake, Pink, and Ivory-black, a like quantity of each, and temper them together. And if the Face of the Party, or the Figure you are to copy require redder shadows than what you have tempered,

add more Lake, if Yellower, more Pink, if Bluer or Greyer, then add more Black.

Thus having prepared your Pallet with Colours suitable to a fair Face; consider again, in case the Complexion be more brown or swarthy, you may temper the Colours as before, putting moreover a little quantity of burnt Oker amongst your Lake, Vermilion and White, that it may look somewhat tawny amongst your heightened Colours. In this case, temper a little Oker, so much only as will just turn it, and for your very deep, and very faint shadows, you may use the same, as for the former Complexion.

For a tawny Complexion use the same in the general, as before, only let the shadows be prepared of burnt Oker and Umber.

For an absolute Black Complexion, your dark shadow must be as the foregoing, but as for your heightnings, you must take burnt Oker, Lake, with Black and White, yet but a little of the latter must be put in at first, that you may the better work it up by degrees: And note, that the single Colours laid at first upon your Pallet well tempered, according to the fore-going Directions, serve for shadows for all Complexions.

C H A P. XI.

What Pencils are to be used in Painting a Face, and how to dispose them. Directions to Paint a Face in Oil Colour, and what Mixtures are requisite for Garments, &c.

YOUR Pencils how small soever, ought to have a Stick about nine Inches long, cut, or sharpened at the farthest end into a point, and when you are to Draw any a ce, lay together two Ducks Quills Fitch-Pencils, two
Goose

Goose Quill fitch'd, two pointed, and two bristled, the Pairs being exactly alike ; and when you are to use them, having your Pallet in a readiness upon your Thumb, take them in your right Hand, and put the ends of your sticks into your left Hand, keeping when you work the hairy ends at a distance, lest the Colours intermingle, and so proceed to your Work, viz. your Cloth being ready primed, and strained upon your Frame, scrape it over with a Knifes edge, not very sharp, to take off the knots if any appear, and so set your Frame and Cloth upon your Eysel a convenient height, so that you sitting upon a Stool level with the Party or Copy you draw, may the better have the Picture equal, &c. placing it according to your Light, as I have directed in Water-limning ; then with a piece of Chalk Draw the Proportion of the Face upon the Cloth, making the place for the Eyes, Nose, Mouth, Ears, Hair, &c. Then take a Swans Quill pointed Pencil, and begin with some of the lightest Colours in the lightest part of the Face, (the Cloth before being primed, or groundlaid) as the heightning of the Fore-head, Cheek-bone, Nose, &c. on the lightest side, and when you have done that, next proceed to the mean Parts, viz. those not altogether so Light, as the Cheek-bone of the fore-shortning, or dark side, the Chin and upper Lip, and by degrees come to the reddest part of all.

Having thus far proceeded, lay the Greenish faint shadows in places convenient, and where you see cause to moderate the harder Shadows ; but have especial regard not to place the Green where the Red should be : And so all the faint and light beginnings being put in, take a Ducks Quill fitch'd, and a Goose Quill pointed Pencil, and begin at the Eyes to shadow with Lake, and trace out those parts of the Face therewith that require it, as the Eyes, Nose, Mouth, the compass of the Ears, &c. and do this before you lay on any Colour, lightly wiping it over with a Linen rag, to prevent the over-coming of other Colours.

Having now put in all the Colours dark and light, take a large fitched Pencil, and sweeten the Colours : That is, go over the several shadows with a clean soft Pencil, which by a gentle and dexterous handling will force, or drive the Colours

Colours into each other ; so that they will represent the laying on at once, and not at several times. This being done, begin again with your clean Pencils of such bigness as the work requires; then the Party sitting in the posture as before, take a curious view, and see what defects you find in the work, and amend them ; after that proceed to heighten, or deepen your shadows, as the Nature of the Piece requires, and if a Beard, or Hair be required, take a Goose Quill bristle Pencil, and put in the Hair about the Face, and rub in the greater Hair with the greater Bristle, heightning it up with your Goose Quill Pencil, and so your Work is done.

If Garments are required, called by Artists Drapery, for a red Garment, lay dead Colour with Vermilion, glaze it over with Lake, and heighten it with White. For Scarlet, Vermilion must be the lightest, deepened with Lake or Indian Red. For a Crimson Velvet, lay burnt Oker, Vermilion, or Indian Red, glaze it with Lake, and touch it up with Vermilion. For a sad Red, heighten Indian Red with White, and let all your deepenings be with Black, Pink, and Lake well tempered. For Green Garments, heighten Bise and Pink with Masticote, and deepen it with Indico and Pink. For Green Velvet, lay the dead Colour with White, and a little Lamp-black, glaze it with Verdegreafe, deepen it with Indico and Pink, and heighten it with Pink and White. For Yellow, take Yellow Oker, Masticote and Umber, lay the dead Colour with Masticote, and White in the highest Places, and with White and Oker in the meanest, and with Umber in the darkest, glazing it when dry with Pink.

For blue Garments, take Indico and White, laying first the White in its due Places; and then your mean Colour, *viz.* Indico and White well tempered in their due places: then deepen it with Indico, and glaze it with Ultramarine when dry, &c.

For Purple Garments, take Oil, Smalt tempered with Lake, and White Lead, and heighten it with the latter.

For black Garments, let the dead Colour be Lamp-black, and a little Verdegreafe, and when it is dry, go over it with

with Ivory-black, and having heightned it with White, go over it with Ivory-black, and Verdegrease.

For Orange Colour Garments, mix Red Lead and Lake, laying the lightest parts with Red Lead and White; the mean parts with only Red Lead, and the deeper with Lake, and if need requires, you may heighten it with white.

For Cloth Coloured Garments, for the ground, take Umber and White, and for the deeper shadows Umber and Black, and for the mean Umber and Oker, and whiten it with Oker and White. And thus much may suffice for Limning and Painting of these kinds.

C H A P. XII.

The Curious and Mystrious Art of Etching, and Ingravings in Gold, Silver, Copper, Steel, &c. displayed, and made manifest in easie and plain Rules and Methods, by which an unexperienced Person may attain to the Knowledge thereof, and the expert be wonderfully improved, &c.

TO introduce this Curious Art, I think it highly convenient to begin with Etching, the better to give a Light into what succeeds, &c. and first of the Ground.

In this case, procure three parts of Virgins Wax, and one of Asphaltum, one part of Mastick, and one part of clarified Rosin, put all but the Wax, putting that into a new glazed Pipkin or Pan, and let it boil over a gentle Fire; at what time put the other Ingredients to it, which being melted, pour it out into fair cold Water, keeping back the dregs; and when it is cold, work it into a Ball; tie it then in a Rag so close, that no Dregs may come through, and use it upon your Copper, as you have occasion.

In preparing your Copper, observe that it be well polished, not lying higher in one place than another, nor no
where

where uneven, and if you espy any specks or disorders in it, coal it over with a well burnt Char-coal and fair Water, and set it aslope to dry, which done, scrape some very dry Chalk or Whitening upon it, and rub it over with a woollen rag, not touching the Face of the Plate with your Finger, till the ground be laid, which must be done in this manner, *viz.*

Put lighted Small Coal into a Chasing-dish, and lay the Plate on the wrong side over it, that a gentle breathing of heat may come through; then take your ground in the rag, and rub it gently up and down the Copper, till it coming through the covering, by reason of the heat, may sufficiently cover the Plate, not too thick nor too thin; and then whilst it is warm, take a Ducks Feather, and smooth it to an exact evenness, but beware the Copper be not too hot, for if it smok, the moisture of the ground is gone; and then in Etching, it will crack, and fly up; and when it is according to your mind, suffer the Plate to cool; then grind a piece of white Lead in Gum-water, not very stiff, and make the white of convenient stiffness, to wash over the first ground of the plate, with a Brush dipped therein, till you preceive it every way smooth, going over it with another Brush of soft furs, and so let it dry.

The ground thus laid, take your draught, after which you are to work, and scrape on the back-side of it some red Chalk, moving it all over, and scrape over that some Small Coal, very fine, suffering it to mingle with the Chalk; and then with a Pencil, or Hand-brush, rub it up and down, till it be smooth, and even and so place your design upon the Plate, and with a blunt Needle, or Steel Point, draw over the out strokes; and then you must have several Needles, according to the smallness and largeness of your strokes in the Copy, and with them in a Tin Pencil, frame or stick according as bluntness, or sharpness requires, take out all the black strokes, pressing so hard, that the Needles may pass through the ground, and make some small impression on the Copper, ever observeing when you lay by your Plate, to wrap it up in a Paper to prevent scratches, or the Air spoiling the Ground, wiping away as you work the Ground the Needles brake up, with a light Pencil,
not

not suffering the Ground to lye too long on the Plate before you finish, for the Air drawing out the moisture of the ground, the Etching will appear broad and deep, working off black and unseemly; or when sometimes you suppose it eaten sufficiently, you will find it defective in many places, and in frosty weather you must wrap the Plate as well in a Blanket as in a Paper, for if the frost take the Copper, the ground will start from it, and so the Aqua-fortis will spread under it, and keep no certain form.

Having observed these directions, take green Wax, and melt it in a new Pan, or Pipkin, and with a pencil cover the edges of the Copper, and stick the Wax round about like a Wall, to keep in the Aqua-fortis; that done, which being firmly stuck on, take the third part of an ounce of Aqua-fortis; and break it with other Water of the same kind, that has been once, or twice used, taking at least two parts of the old, to one part of new, and in case you have no old Aqua-fortis; then instead of it, use strong white-wine Vinegar, as a mixture; and for such Figures, or things, as you would have lye fine, and sweet, you must pour out your Aqua-fortis into some Earthen Vessel; and then wash off what remains with fair water, and suffer it to dry; then melt Candle-grease, with a little ground, and with a Pencil cover the Places you would have lye faint; then pour on again your Aqua-fortis; and so continue to do, as often, as you can conceive it convenient; then melt off the ground over a gentle Fire, and with a clean rag, wipe it off, and you will have the perfect impression of the Copy on the Plate, which you may work off at the rowling Press, to serve your occasions, and thus you may do upon any metal the water will take, &c.

From etching, I proceed to the Art of engraving, and he that would be expert herein, must have a regard to true drawing; wherefore, I would advise the unskilful well to consider what I have laid down of that kind, and so provide himself with materials for the performance of this curious Art.

In the first place, be sure to choose a good Oil stone free from pin-holes, or flaws, not too hard nor too soft; and therefore the better to furnish your self aright, you must consult,

consult, in what the stress of your business will lie ; for if you intend Picture, or Letter work, accounted more curious than Marks, or Arms used by Gold-smiths, and Pewterers, you must have your Gravers accordingly shaped, and tempered, for Gold-smiths, &c. Gravers are frequently crooked, the better to come at hollow places, &c. but for Copper, or any Plate, that may be easily come at, the strait Gravers are ever held the best, and if you suspect their goodness, try whether, or not, they are file proof; and if so, they will fit your purpose, though at first, by reason of their temper, they may appear brittle, and sometimes break short, yet being ground out, they will still grow better and better, and come in a little time to an excellent temper.

As for the forms of Gravers, as to their use, the square one makes a broad shadow stroak, or hatch, and that which is form Lozenge, a narrow deep one, the one being appropriated to large, and the other to fine stroaks, yet if your work be curious, a middle size between these will the better accomodate you, which will render your stroaks, or hatches more graceful, and yet carry with them sufficient force and vigor.

In case of whetting your Gravers, which is frequently required, pour a little fine Olive Oil upon your stone, and laying that side which you intend shall cut the Copper flat upon it, whet it very flat, and even, and to that purpose, carry your hand very steady, continuing an equal strength, and placing your fore finger firm upon the contrary side, so that you may have more power to guide it with exactness ; then turn the unwhetted side, and use it in the same form and manner, that there may be a very sharp edge ; then turning uppermost that edge, which in the former manner you have whetted, setting the end of your Graver obliquely upon the Stone, bear your Hand with an exact evenness, to the intent it may prove very flat and sloping, in the form of a Lozenge ; and in this, you must take great care ; for if your Graver be not well, and rightly whetted, you can never grave well.

Observe, when you have a Graver, whose handle is a round, or oval knob, if you would prevent it from running into

into the Copper, or other metal you grave, further than is convenient; then must you cut off that part of the knobs, which lies in a Line with the point of the Graver, and make it as level as you can with the Point; nor then will it hinder your hand from carrying an even stroak, which otherwise it will do, especially in working a great Plate, by bearing too much upon the Copper, and in holding it, place the knob-side or that part of the Ball not cut off in the hollow of your Hand, extending your fore-finger towards the point, and laying it opposite to the edge that is to cut, and place your other fingers on the one side of the handle, and your thumb on the other side of the Graver, in such a manner, as with ease you may guide it flat and parallel with the Plate, being ever very careful, that your fingers do not interpose between the Plate and Graver, lest it hinder you in carrying it level with the Plate; hindering you from making your stroaks with freedom, and neatness.

Further to fix you in this affair, you must have a strong round Cushion of Leather filled with fine Sand, about half a foot over, and four Inches in the Diameter, rising a little in the middle, and sloping towards the Brims, but not much, and this must be to lay your Plate on, that you may turn it at leisure; and if you are to make streight stroaks hold your Graver in a direct Line, Or in case you would have your stroaks broader, and deeper in one place than in another, you must lay more or less stress, as you see occasion, observing in all streight stroaks, to hold your Plate steady, and firm upon the Cushion, and the Table, or Bank on which it stands well fixed: but in crooked, and winding stroaks, you must hold your Hand, and Graver steadfast, and only turn your Plate, or otherways you cannot command your Hand to that neatness, as in many cases is required, observing at the same time, for the more steadiness to keep your Elbow fixed upon the Table, and your Eye on the Plate, scraping your work, as you go with the edge of a burnisher to take off the roughness; yet be careful that you make no scratches, and the better to see what you have done, rub the place over with a Piece of black Felt dipped in Oil; and if any scratches appear, with your burnisher rub

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them

them out ; and if any stroaks be too hard, in the same manner you may make them fainter. And in case your Graver should happen to appear very hard, which by its excessive brittleness in often breaking is known, lay it upon a burning Charcoal, till it grow yellow ; and then dip it in water, and it will by often so doing render it of a better temper, but if it be blunt in a short time cutting, then it is too soft, and you must heat it in the Fire, and dip it in Lime Juice, or Vinegar : and thus much for the management of the Tools, &c. the which by a little Practice will soon grow natural.

Another material thing in Art is to be considered ; which is, to take the Impression you are to cut, or grave upon your Plate ; and in this case, heat your Plate over a fire of Small-Coal, and having a Piece of fine Bees-wax tyed up in a fine rag, worked like a ball, that it may fit close, wipe the Plate over with it, when it is hot enough, very lightly, till you perceive it is covered with wax, very thin and even, laying it with a feather, in which at first you may find some difficulty, but use will render it easie ; and in this case, if you are to imitate an exact Copy, it must be so ordered, that it may stand the contrary way on the Plate ; and therefore in consideration hereof, your best way will be to track it over with a black Lead Pencil ; especially in case of a very old Picture, which being done, take a peice of polished Ivory, and placing your Picture exactly on your Plate, the Print side downward, rub it lightly, and you will perceive the exact proportion of the Print remaining upon the Wax, or the Plate ; then take a steel point, and go over each particular Limb, &c. especially in the out stroaks, and there will be but little difficulty to mark the shadows which lie before you as you engrave the Work, and the readier it will be, if so you note how far your shadows should be dark, and how far light, with your black Lead before you rub it off.

The carrying of the hand in this kind, will at first seem difficult, as to the depth of your stroaks ; but in general, observe ever to carry your hand with such a slight, that you may end with the same faintness, or darkness you begin : And in case, one part require more deepness, and blackness than another, you must do that by degrees ;
and

and that you may the more expertly do it, observe that your strokes be not too close, nor too wide; and therefore to bring your hand in the better, practise at first by such Prints as are but loosely shadowed, least by attempting to imitate those more dark and close, you happen to be puzzled where to begin, and where to end, but practise will inform you.

As for Letters; in case of Copies, the Letters must be gone over with ungummed Ink or with black Lead, and laid on the Plate when waxed as the former, unless you are so dexterous at writing, that you can draw them by hand, or with a steel point on the Plate in true Cut.

But if a Map, or other Mathematical Instrument be required, every circle, or perpendicular must be drawn over as before, or you cannot exactly imitate. But in case, of a Face, or coat of Arms, or Instruments not to be Printed; then you may black over the back-side, as in etching, but you must use for engraving a wax ground only.

C H A P. XIII.

The Mystery of cutting in Wood, laying Gold, or Silver, solid, or liquid, preparing Colours for the painting of Pictures, or Prints; the way of refreshing old Paintings, or Pictures; colouring Maps, Buildings, Landskips, and many other curious things, and matters.

As for Cutting in Wood, in relation to Pictures or the like.

YO U must prepare your Wood in the manner of a Plate, though an Inch thick, or according as the design requires, either Box, or Pear-tree, rendering it by plaining as smooth, and level as a peice of Paper; which done, having a draught of your design, you must rub the

Wood gently over with a ground paste made of the finest flower; and then fix your draught, or copy upon it, when suffering it to dry, rub the back side of the paper which must be uppermost, with your wet finger, till you crumble it off so thin, that the Print plainly appears upon the Wood, as if it had been painted, or drawn thereon with a Pen or Pencil.

Having thus prepared your Wood, if it be small, fasten it up with Coins, that it move not, unless there be occasion, or as the strokes require, and then having a fine small knife in the nature of a Pen knife, but much less and thinner, especially for the fine strokes, cut out all the white strokes, and ground, and suffer the black ones to stand, sharpening the fine strokes, and bringing them to an edge that they may not print black, or dull; and above all, be sure to do it with so light and Curious a Hand that you break none of them; for if so, you much deface, and injure the Work, they not being to be repaired; and further observe to leave a good foundation to the strokes, though never so fine at the top, least by the force of the Press, they break in working.

You may have your Pattern, or Advice, if it be new drawn upon the Wood with black or red Lead, though the former way is the securest from being rubbed out, or injured, &c.

To write, or gild with Gold, and Silver, an easie, and curious method, &c. If you would have fair Letters appear in Gold, or Silver, take Gum-Armoniack, and grind it with a little juice of Garlick, and put thereto a few drops of the weak water of Gum arabick; and so make it to the thickness of Ink, that you may conveniently write with it; and so write, or draw what you think convenient, and suffer it to dry a little, but not too much, lest it take not the Gold, or Silver; nor too little, lest it drown them. Then lay your Gold or Silver in Leaf upon a Leather Cushion, being a peice of Calves skin stuffed, with the rough side outwards; and so with a sharp knife, cut it into what proportion you will, suitable to what you have written, and taking it up with a loose piece of Cotton-Wool, on which you have breathed, cover with it the place intended, pressing it down hard, and where the
Gum.

Gum-water is, it will take it ; then brush away with other Cotton, what it has not taken, and being dry, burnish it with a piece of polished Ivory, and it will appear very splendid.

To write, or Gild with liquid Gold or Silver, &c. Take Shell Gold, which is made of the ragged edges, or cuttings of Leaf Gold ; and when you are desirous to use it, put it in a little fair water, tempering it up with a clean Pencil, and lay it on with a Pen, or Pencil in what form you please, either by way of Writing, or Gilding ; and when it is dry, rub it over with a Dog's, Calfs, or Horses Fore-Tooth, and it will be very shining, and Pleasant. And of this, as of the former, you may lay on more, or less, either for the gilding Picture Frames, Coaches, Rooms, or the like. As for lacquering, it only consists of carrying a Pencil dipped in rectified Spirits over Leaf Silver, which changes it to a Gold Colour.

How to prepare Colours to Colour Printed Pictures, and thereby render them Beautiful. For a curious Violet Colour, take Turnsole, being a Dye infused into a piece of Linen rag, beat it in Vinegar, and it will give you the Colour desired, after which dissolve in it some Gum-arabick, and use it as you see fit.

For a curious yellow, take Gum-booge, and dissolve it in fair Spring water over a gentle fire.

To make a transparent red, take Braziel, grind it, and heat it over a Fire, with small Beer, and Vinegar, put in a little Powder of Alum, and Gum-arabick, and suffer it to boil, till it tast strong, &c.

For a transparent purple Colour, grind Log-wood, and boil it in all respects as the former,

For a curious bleu, take fine Litmos, and cut into small peices, lay it for the space of twenty four hours in a weak Lake Gum-water ; to make which, you have been before directed, and it will answer your expectations.

To make a curious Green, take the juice of Rue, and a little Verdigrease.

For a light Green, take Sap green flower de Biss, or tawny Green, and steep them in fair Water.

To shadow Greens, steep Indico, and Yellow Berries.

To shadow Blues, take Litmos and Indico, steeping them in the Lees of Soape ashes, and use them with Gum-Water.

To make a good Brown, take Ceruse, Red Lead, Pink, and English Oker, mixing them with Gum-water.

For an Orange Colour, take red Lead, and yellow Berries, and mix them with Gum-water.

For a Curious flesh Colour, take white Lead, red Lead, and Lake with Gum water.

To make a Colour for precious stones, take Verdigrease and Varnish for an Emerald, Florence Lake for a Ruby, and Ultramarine, for Sapphire.

How to Colour Maps, and what is to be observed therein. In this case as well as in other Printed Pictures, is no more than to set them out in their proper Colours, which you must accordingly consider, as the nature of the thing requires, it being impossible to direct in particulars, however observe that water must be a faint blue, Sky somewhat deeper, Trees green, Houses in Maps, are usually red, and ways yellow, and green : And to these, and the rest, suit any water Colour, you think suitable, mentioned in this Book.

Colouring for Landships, and building at large, very proper. In Landships, for the saddest Hills, use burnt Umber, for the lightest, put some yellow to it ; and for other Hills, lay Copper green thickened on the Fire, or in the Sun ; and for those further off, mix with it some yellow Berries, and let the fourth part be done with green Verditer, and the furthest, and faintest Places with blue Bise ; for the lightest places, use white, and shadow it with blue ; as for the High Ways, do them with white, and red Lead, using for Variety yellow Oker, shadowing it with Burnt Umber ; and it may likewise be used for sandy Rocks, and Hills ; and as for other Rocks, you may lay them with several Colours ; but at a distance, they must appear blue, as in the Air ; as for the water, do it with black Verditer, and white shadowed with green, and with blue Verditer, when the banks cast a green shadow upon the water ; but when the water is dark in the shadows, shadow it with Indico, blue Verditer, and green, &c.

How to Colour Building, &c. In colouring Buildings, you must use much variety the better to set them off, yet not so, as they may appear extravagantly adorned, or contrary to the use of this kind ; but for Walls, and Conduits, use

a mixture of white, and black, as likewise for other materials, but if a Brick-House, use red Lead, and white, and where the Houses stand thick together, there use sundry Colours suitable to the occasion.

To cleanse old Pictures, and render them fair and pleasing.
Take Wood-Ashes, the whitest that may be had, sift them through a fine lawn sieve, and with a Sponge, and fair water, wash the Picture gently over, not rubbing it hard, least you impair the shadows, which being done, and the Picture dry, take distilled Varnish, and rub it thin, and gently over, and it will create a lasting freshness, or for want of this, you may do it with the whites of Eggs exceeding well beaten, or with Gum-water: But note, the Pictures to be thus used, must be such as are laid in Water-Colour Oil.

C H A P. XIV.

Instructions for restoring Tapestry Hangings, Carpets, or Turkey Chairs, that are faded, or decayed, to their lively Colour, to prepare Flock Cloth for Hangings; Spanish white, Size, Alum water and Gum-arabick Water, how to make them, as also to thicken Cloth for Screens, &c.

To refresh Hangings, or Tapestry, Carpets, or Chairs,

BEat the dust out of them in a dry day as clean as may be; then rub them over well with a dry brush, and make a good Ladder of Castile or Cake Soap, and rub them well over with a hard brush; then take fair water, and with it wash off the froth, and make a water with Alum, and wash them over with it, and you will find, when dry, most of the Colours restored in a short time; and those that are yet

yet too faint, you must touch up with a Pencil dipped in suitable Colours; and indeed you may run over the whole piece in the same manner, with water Colours mixed with weak Gum-water, and it will cause it if well done, to look at a distance like new.

To make Flock Cloth Hangings, &c. To do this, take a course Canvas, spread it even upon a Floor, or Table; then take flocks, or shreds of Woollen, grind them as small as dust, and having sized over your Cloth with a good strong size, sift whilst it is wet the flocks on through a sieve very fine, and having done it even in all places, run a rowler of wood, or Iron over the piece, to press them down close, and so suffer them to dry in the shade, lest the Sun, or Fire parch, and make them crack, and when dry, brush them lightly over with Alum-water; and so draw your design with Black Lead, red Lead, Char-Coal black, or any other Colour you fancy, and it will at a distance look like Tapestry, and be very lasting in a room, where no great Fires are made.

How to thicken Linen Cloth for Screens, Bed-teasters, and the like. Grind whiting with size, and to prevent its cracking, add a little Honey to it; then take a soft, and smooth brush, and lay it upon the Cloth, and so do two, or three times, suffering it the mean while to dry between layings on, and for the last laying, smooth it over with *Spanish* white laid with Line-seed Oil; the Oil being first heated, and mixed with a small quantity of the Litharge of Gold, the better to endure the weather, and so it will be lasting.

Spanish white how to make it. Take fine Chalk, with a tenth part of Alum, grind them with fair water, till very soft; and then bring them to a thickness, and make them up into Balls, lay them to dry leisurely; and then heat them well in the Fire; and so use them.

To make a very good Size useful upon sundry Occasions, &c. Take Glue a Pound, steep it in four Gallons of Water, till it be dissolved; then take a pound of the shreds, or cuttings of Gloves, or other the like Leather, and boil them in the Water, wherein the Glue has been dissolved over a gentle Fire, till it feel very clammy between your Fingers, and

and when that is done, strain the liquid part through a Sieve, and keep it for your use,

To make Alum Water the best way. Take a Pound of Alum, bruise it, and put it into two Gallons of Water, adding a small piece of Gum-arabick; and having scummed it after a gentle heating from the froth, or scurf, strain the Water, and keep it for your use; and especially to wash over Printed Pictures lightly before you Paint or Colour them, by which means, they being afterwards suffered to dry, the Colour will be prevented from sinking, or soaking in unseemly.

To make Gum-arabick Water for all Occasions. Take of the transparent, or white Gum two Ounces, half an Ounce of Alum, and two Quarts of Spring-Water, dissolve the former in the latter over a gentle Fire, scum it, and take away the dross; and so use it with Colours, or in making Ink, or the like, and if you perceive it too strong, you must put more Water, but if too Weak, then more Gum, taking out the dross as before.

And thus much may suffice for the first Part of this Book, and past all peradventure prove useful to the Reader and Practitioner, in such a manner, that I can scarcely believe he ever will, or at least will never have cause to repent of, or repine at the cost, and Labour so necessary a Treatise, fill'd with so much Variety puts him to.

The End of the First Part.

Arts

Arts Treasury, or a profitable, and pleasing Invitation to the Lovers of Ingenuity, contained in many rare, and extraordinary Experiments, and Inventions, &c.

CHAP. I.

Metals, and Minerals, their Quality, and Generation, from what they proceed, and how produc'd; the Art of transmuting, and making Artificial Metals, or Minerals, with other material Matters.

IN case of Minerals, and all things inanimate, concentr'd, or contained in the Bowels of the Earth, it is convenient to reduce them to four kinds of Mixtures, viz. Metals, Stones, Earth, or Juices, Nature producing them with mixture, and participation of each other, and here by Earth, I mean the simple Element only, of which, as the Philosophers affirm, all sublunary Bodies are compounded, and though the Earth according to the Situation of Countries, and differences of Climes, differs in Scent, Colour and Taste; yet that proceeds from a mixture of some other part, or effect of the former; the pure Elementary Earth being in all places one and the same; in which, and by the Operation of heat and moisture, the others are generated; and as there are more or less of these, the

Metals.

Metals are finer or courser: But to come nearer to our Purpose.

Gold is found in Grains, or Sand; and Silver in Veins, and sometimes twisted and wreathed like the Branches of a Vine; and at other times these Metals are found in Stones, with whose hardness they have incorporated themselves, and being broken, are with fining Materials extracted. As for Gold, it is the most perfect of all inanimate Bodies, and has its Generation, as I have said, from heat and moisture in the Original; but of Parts so well contracted, and compacted by Concoction, that it is in a manner incorruptible, it being beyond the Power of any Element to prejudice, or destroy it; for the Fire of the most subtle and piercing Quality, consuming all other Metals by long Application, renders Gold more Pure, nor can the Air, Water, or Earth diminish its luster; but that it will again recover it, by which means, it has deserved the Estimation the World affords it; and is so ductil, that being expanded, an Ounce of Pure Gold will cover a place of twenty, or thirty Feet square.

Silver as is hinted, carries a fineness next to Gold, wanting little more than the Colour, to be brought to its perfection; wherefore those that strongly inveigh against the transmutation of Metals have been convinced, that there is a possibility to turn Silver into Gold, by reason Fire and Artificial Concoctions may supply the defect, of which there have been many Experiments, and from the even mixture, good temperature, and fineness of its Parts, it is not only ductil, and malleable, but endures the Fire with little waste; and admirable it is, that an Ounce of fine Silver may be drawn out into a thousand four hundred Yards, and that too, for the most part without breaking; and all this extension may be Gilded with six Grains of Gold.

Copper is a Metal to the composition whereof a great quantity of Sulphur is required, and from a distempered heat in the mixture, the fiery heat proceeds, and being over burnt in its composition, it is therefore less Subject to Corruption, and is used about Engines of long continuance, because it rusteth not, and is found in Mineral Stones of divers Colours, though the most Effectual Colour is
Green

Green or Blue, and so often is it ingendred near Gold and Silver, that many times following a Vein of it, much Pure Gold, and oftener Silver has been found; and such Veins of Copper, as make a superficial shew, are upon being digged, Richer the deeper you go; and that is occasioned by the moisture; and many times Pure Silver is at the Bottom, &c.

Iron though very common, which lessens its esteem, and may be termed the Wall, and Bulwark of Kingdoms, the safe-Guard of private Persons and the Handy-craft Tradesmans only *unum necessarium*, for without it few Employments can subsist. As for its extraordinary hardness from over much Earthy parts, or fixed Sulphur in its composition; not, but it has a proportion of Quick Silver in it, so that it will not without a very violent heat be melted, nor will it break, but expand by force of hammers, or other Violence, and receive an impresson by dilating it self; and although it is cold and dry, yet by reason it is more porous than other Metals, it is of less weight; and consequently subject to be consumed by Rust.

Lead is frequently found in the Silver Mines, and indeed as often by it self, nor scarcely is there any ore, but some quantity of Lead is found in its mixture, as being by the abundance of its humidity serviceable to it, and especially in the melting of Gold and Silver, which cannot conveniently be done without the help of Lead; for in this case, by reason of its moisture, it does easily evaporate, carrying with it whatever is not Gold or Silver, and in its weight comes nearest to the former, *viz.* Gold, and in Colour to Silver, not being subject to Corruption, as Iron.

Tin is begotten, or generated by a grosser sort of indigested Quick-silver, though much finer than Lead, by which means, it becomes more white and hard, though from the ill mixture of its substance, it is accounted the Bane of Metals, making them brittle by never so small a mixture; and the reason is, that by its incorporation, it hinders the ductility, and disorders its former equal temperature; except in Lead, with which it better agrees, by reason of the moisture and softness; so that being incorporated they become ductil, and malleable.

Quick-

Quick-silver is of a liquid penetrating Substance, and greatly in use; especially in refining Metals, agreeing with any sort, abounding with much humidity; which gives it brightness and weight, and is held the principal of the Generation of Metals; nay its very substance is transmutable into Metals, enduring as well as those that come out of the Mines, the trial of the Fire and Hammer.

There are sundry Metals, called Artificial Metals, made by mixture of Minerals. As from a mixture of Tin, and Copper, Brass, or Bell-metal is made; as also for pieces of Ordnance, and sundry other uses: and in this case, a Pound of Tin must be put from four to eight Pound of Copper, according as you expect it brittler, or tougher.

Latten is made of Plates of Copper, put into Crucibles, and covered with Powder of Julamina, or a kind of half Mineral Sulphur strewed over it, and upon that, the Powder of beaten Glass, to which, Fire being put, and the silem, or greatest force of it kept in, it alters the Colour of the Copper to a brassy quality, and adds in weight eight Pound to the Hundred.

Pewter, a mixture of Lead and Tin, and has sometimes in it, for the better hardning and keeping it together, a small quantity of Brass, or Copper: And thus much for the Generation and Description of Metals, which the Earth so abundantly produces for the use and benefit of Mankind, from whence I proceed to the hardning of Metals, for Handy-craft, and sundry other uses.

C H A P. II.

Instructions for softening, and hardning Metals, and Minerals suitable to sundry occasions, as using in Tools, Engraving, &c. The Art of Soldering, and Gilding, Burnishing and the like, upon Metals, &c.

To soften, Steel or Chrystal.

TAKE of unquenched Lime a Pound, and as much of Soap-boilers Ashes, and having made a Ley therewith, put your Steel, or Chrystal into it for the space of twenty four Hours, and it will easily be cut, or other ways ordered, &c.

To soften brittle, and stubborn Iron. Take the juice of Colts-foot and Hemlock, and when your Iron is hot, steep it therein, and it will become ductil, or you may do it by often quenching in Line-seed Oil.

How to make a Powder to soften Metals. Take your Metal, and heat it well; then take ground, or beaten, Glass, common Salt, and Brimstone, and sprinkle them upon your Metal whilst it is red hot, and afterward burn them off in the Fire.

To make Iron, or Steel, as soft as Copper the better to engrave upon, &c. Take Chalk and Alum, bruise them well together, and being wet with the juice of an Onion, dawb it over your Metal a Finger thick, and thrust it into the Fire, suffering it to burn till it become clear, and it will answer your expectation.

To make Iron, or Steel so soft, that you may twist it at Pleasure. Take the Gall of an Ox, mix it with Oil of Turpentine, and Urine, heat your Metal, and strow upon it Powder of Vitriol; then wash it over with the Materials before mentioned, till it comes to be somewhat cool, and it will be very flexible.

Instructions

Instructions to harden soft Iron. Take the Concoction of Vervein, Housleek Juice, the juice of Hore-hound, Radish, or Rue, dissolve in them some Alam Powder, and the business will be effected, if you anoint your Metal when hot with the liquid part.

To harden all manner of Iron Tools, or Instruments. Take the Leaves or juice of Pentefole, or five leaved Grass, the juice of a Limon, or Whitewine Vinegar, and dip the pieces of Metal, or Tools in it, when hot; and do so often, and you will find the advantage.

To make Iron as hard as Steel. Take the juice of Roman Nigrel, and Mouse-Ear, Herbs so called, and strike over the Metal being hot; and by this means Tools may be made of it that will cut Iron.

To harden Metal, so that it shall not crack, nor flie, &c. Take Oil of Spike, and Mutton Suet, and dawb over the Metal hot; then plunge it suddenly in cold Water, and the Business will be effected.

To harden Augres, Files, Chizels, Mattocks, &c. for use. Take the Juice of Radish, or Cole-worts, mix it with Ley made of Soap-ashes, heat it over the Fire, and when your Tools are well heated, or red hot in the Fire, quench them in it.

To make Tools so hard, that they will cut Iron, Copper, &c. Take Salt Peter and Copperas, strew them in Powder upon the Tools when red hot; and then quench them in the distilled water of Shell-Snails, and your expectation will be answered.

To Colour or Varnish Tin, Copper, or the like Metals. Take half a Pint of Line-seed Oil, warm it over the Fire, and scum it; then put therein bruised Amber, and Alcepiticum, of each a quarter of an Ounce, and suffer them to boil up to the thickness of an Ointment; after that, set them in a close earthen Vessel under ground for the space of four days, and when you use it, strike over your Metal with a Brush, or Pencil, it being at the same time hot over a Pyn of Small-coal, and it will be of a curious Amber, or Golden Colour.

The manner of Gilding upon Metals, viz. Take Wine-stone, Verdigrease, and Sal-armoniack, seeth them in

White-wine with some common Salt, strike over the Metal indifferent warm with the liquid part, and suffering it to dry a little, take Water of Leaf Gold, and lay it on, which by the Virtue of the washing will stick fast; so that with a burnisher of Ivory, you may finish it in its proper Lustre.

How to make a Water for the Gilding Metals. Take three Pints of Spring Water, two Pound of Roch Alum, an Ounce of Roman Vitriol, and as much Verdigrease and Orpiment, boil, and scum them; and then put in water of Tartar, and Bay Salt, of each two Ounces; and when the Ingredients are well dissolved, and come to a thickness, strike over your Metal therewith, dry it against the Fire, and Burnish it.

That Cats may not disquiet Pigeons, or other Birds. Hang Branches of Rue, and lay them in the Windows and Passages of the Pigeon House, &c. It will drive them away. *Wicker.*

How to Gild Iron, or Steel with Quick-silver, and Gold Foil. Take Vitriol, and Sal-armoniack, of each an Ounce, and of Alum two Ounces, beat them fine, and boil them to a thickness in fair Water; add a dram of Verdigrease, and half an Ounce of Sublimatum, and spere over your Metal with it, when having mixed your Gold and Quick-silver together, lay them on with a Leather Spatula, as smooth, and even as may be; then suffer the Varnish to take it, and burnish it over.

To make Iron, or the like, a Curious Blue, or Steel Colour. Burnish your Metal to a brightness, and take Cowe-hoofs, burn them, and hold the Metal over the smother, or smoak of it, and it will answer the end designed, &c.

To make Copper, &c. a Silver Colour. Take Bay-salt, Alum, and Wine-stone, grind them to Powder, adding in your grinding some Leaves of Silver, and put them into an Earthen Pot, close stopped with your Copper amongst it; and then taking it out, rub it over with some of the Powder, and Burnish it.

A very good way to burnish Iron, or other Metals. Take of Aloepaticum, Citrinum, and Amber, each an ounce, make them into Powder, and place them over a gentle Fire.

in a well glazed pot; and when you perceive it melted, put to it a quantity of scalding Oil; and when the mixture is well made, let it cool; and so your Metal being glowing hot, lay a little piecenpon it, and rub it over.

To make a good solder for Iron, or any hard Metal being cold. Take of Sal-Armoniack two ounces, two ounces of common Salt; the like quantity of Wine-stone in Powder, six ounces of thick ground Glass, two ounces of Clock-spike, bruise and mingle them well together; and so put them into a linen Cloth, and suffer the Cloth to be laid a finger thick with soft Clay, encompassing it on the out-side, and put them into a well glazed earthen pot, with a lid, or cover, and put that into another larger pot of Earth well covered, and suffer them to stand over a gentle Fire, that the heat may encrease by degrees, till all be red hot, and run; then suffer it to cool, and break it small, and grind it to Powder: Then in case of soldering, make your Iron, &c. fast, and the joints close laid, lay a paper under them, and upon it some of the Powder; as also between the joints; then wrap it round with Clay, except the upper part, which you must leave open to solder at; then take the Powder of Burras, and put it into Wine or Aqua-vitæ, and suffer it to dissolve, when dipping a feather therein, strike over the upper part of the joints, and it will begin to smok and hiss; the which ended, you may uncase it, and find it perfectly soldered.

A way to solder warm, or rather hot, on Iron, Steel, &c. Take Gum-water, beat it up with green herbs of any kind, till it become a Paste, or of that thickness, and strike it on your Metal, or lay it on the joint rubbing Soap over, at what time heat it, and it will prove a good Cement, &c.

To solder on Copper, &c. Take of Copperas an ounce, half an ounce of Orpiment, or white Arsnick, dividing it into two parts; and then make your Copperas run with Fire, then add one part of the Arsenick, or Orpiment; and after you have spread it thin on a fine stone, add the other part; then beat it into Powder, and use it as the solder for Iron, &c.

To solder Latten, a Metal, or mixture of Metals so called. Take a File, and make the parts to be joined very smooth;

then put them together, and being hot, scrape your Powder of Burras, and keep it close till cool, and the joints will be fastened, or fixed.

To varnish like Gold on Tin, Silver, or Copper, &c. Take an Earthen Pot well glazed with a close Lid to shut in; and put into it six ounces, or half a pint of Lin seed Oil, an Ounce of Aloepaticum, and the same quantity of Mastick, make them into a fine Powder, and put them into the Oil, and cover the former pot with a bigger; the first having a small hole in the top through both lids, the better to stir the materials, and having closed the outward pot about with Clay, and suffer it to stand over the Fire, till it boils up to the hole, then cool it; and when you would experiment it, polish your Metal, and strike it over the Metal, being indifferently warm; and so do it over twice, suffering it to dry between either time, and the business will be effected.

To lay Gold on Iron, a brief and easie way. Take liquid Varnish, one Pound, and of Oil of Lin seed, and Turpentine, each an ounce, mix them well together over a gentle Fire; and lay them as a ground whereon to gild with Leaf Gold, &c. laying the Varnish very thin, and suffering it to dry.

Another easie way to gild on Metal, &c. Take of Gum-arabick, and Bole-armoniack, each an ounce, put them into an earthen pot with a good close cover, set it over a gentle Fire; and when they are warm, put in two ounces of Lin-seed Oil; and when they come to a Varnish thickness, lay them for a ground as the former, and on them the Gold, &c. observing for the better splendor, when it is dry to polish it.

C H A P. III.

Valuable Metals, their fineness to be known by essay of Coins, and how they are to be known in their true Value; and what is to be observing in preventing your making false Moneys.

HAVING briefly run over fundry matters relating to Metals and Minerals, I now proceed to come some what nearer their true value, as by the rules of Art, they are laid down by curious Inquirers into those Affairs, &c. especially as to what relates to Metals, used in Vessels of value, and current in Coins, &c. the principal I take to be Gold, and Silver; the rest being vulgarly known, and therefore not requisite to be mentioned in this Place.

As for the weight used for these fine Metals, it is that of *Troy*, consisting of twelve ounces; and the ounce of a hundred and fifty Carots, and may again for the deciding of lesser values be divided into four hundred and eighty Grains, as for the Pound *Troy* weight of fine Gold, it is worth thirty six pounds, and so lessens in proportion of Allay; in this manner, viz. an ounce of fine Gold is valued at three Pounds; and that of thirty three keys fine, at two Pounds seventeen shillings six-pence; and so lessening, viz. twenty two Keys, at two Pound fifteen shillings; twenty one Keys, at two Pound twelve Shillings six-pence, at twenty Keys, two Pound ten shillings, loosing two shillings six-pence per ounce, as a Key or Carot is wanting in the fineness of twenty four.

In this case to know the fineness, or defect, it must to prevent defraud be found out by the allay, which upon the touch-stone may be done by way of Essay in this manner, viz. take Needles of Gold, and Silver, and Copper allay, suitable to the several allays, and suffer these to be of four sorts, viz. the first to be of fine Gold, and Silver: The second of Gold, and Copper. The third of Gold, Silver, and

and Copper. And the fourth of Silver, and Copper only ; the first for the trial of Gold ; and the latter for the trial of Silver, making of these mixtures twenty four Needles of sundry finenesses. As first of fine Gold of twenty four Carots without Allay. The second twenty three Carots of fine Gold, and one of Silver. The third twenty two Carots of Gold and two of Silver ; and so proceed to one Carot worse, till there remains but one Carot of the fine Gold in mixture with the other Metals specified, *&c. viz.* twenty three Carots of Silver, and by the same rule proceed to the Gold and Copper, and Silver and Copper, marking each Needle for the better distinction upon occasion of what fineness it is ; and by this way, you may be satisfied of the fineness of any Ingot, or Piece of Gold or Silver in Coin or otherways by comparing them on your Touch stone with the Needle, whose allay you already know, or trying them, till they become equal or alike, which when wetted will plainly appear. As for the value of Silver, that which is fine is accounted five shillings two pence of our Money the ounce, though there is some that will fall out in fineness, to be worth five and eight pence, and the like. But these Essays not being to be done by every Person who receives Money, I shall by other ways instruct them how they may detect counterfeit Coins.

Past doubt, few that have the Handling of Money are Ignorant, that Coins of all sorts have been counterfeit, some by imbasing in mixture, others by corrupt Metals, and other by way of plating ; and to know these ; in case of Guineas or broad Gold, First, weigh them, and try them by Essay as aforesaid ; and then if you further suspect them, try them by Fire, or by Aqua-fortis ; and if they be of base Metal, or corrupted with is, they will soon grow dim, and their Lustre in a small time more and more impair ; but if you suspect them plated, especially Guineas, throw them indifferent hard on the edge, and the Imbosment will open, and you may discover the shell to rise. In case of gilded Shillings, though they have the Scepters as Guineas, which some Persons have had the Art to place there with graving Tools, yet your best way is to try them by racing with a Pen-knife point in any convenient Place ;
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and although they are double gilded, the Silver will appear.

The counterfeit Milled is washed over or plated ; and to discover this, you will find the Letters imperfect, or perhaps none upon the edges of Crowns or half Crowns ; the sound likewise will be flat and dull, and the Metal on the outside may be easily raised to discovered the defect.

As for old moneys, the worst size is the half Crowns with pieces of Copper plated over ; and these you may know by their rising in the middle falling hollow, Mackle in the stamp, or better by raising the thin Plate on the edge, and as for smaller money mostly mixed with Silver, your touch stone is the best tryer.

CHAP. IV

Instructions for making black, red, white, green Inks, &c. for sundry uses as well solid as liquid, with that of the late Invention in Powder ; Directions for mysterious writing, and other things, &c.

To make the best common or Black Ink.

TAKE a Gallon of Rain-water or clear Spring or running water, and put twelve ounces of Nut galls bruised, or broken into it, and of Gum-arabick and Copperas of each two ounces, suffer it with once a day stirring to stand for the space of twelve days in a warm place ; and so use it as you have occasion : And in this manner you may make a greater or lesser quantity ; but if you want Ink of this kind for present occasion, you may boil your Ingredients in Vinegar, and Water ; but the Ink will not prove as the former.

To make red Ink. Take the Powder of Braziel an ounce, white Lead and Alum of each two drams, Gum-arabick a dram,

dram, put these into a pint of Urine, and stopped close in a bottle, and often shake them together, and the business will be effected.

Another way for red Ink. Take of Gum-arabick half an ounce, Vermilion an ounce and a half, Lake a quarter of an ounce, and Vinegar indifferent strong a quart, mix them well together over a gentle Fire, and then suffer them to stand a while, shaking the Vessel when you come to use it.

To make white Ink to write on Black Paper or the like : As in case of Consolatory Letters to those whose Friends are deceased. Take an ounce of chalk, as much Quick-lime, and a quarter of an ounce of Egg-shell with half an ounce of Burnt Ising glass, grind them well together, and put them into Gum-water of any kind to a thickness of writing, and the Ink by Candle-light especially will appear like Silver.

To make Ink for the conveniency Carriage in Powder, &c. Take Lamp-black half an ounce, the Powder of Galls an ounce, Vitriol or Copper, as half an ounce, Gum-arabick a quarter of an ounce Ivory black a quarter of an ounce, make them into balls with water, adding if they stick not well together more Gum; and when you have occasion to use it, scrape a little into a small quantity of Wine, Water and Vinegar, and stir it about, and it will be exceeding black Ink immediately; and so you may be always provided with it without fear of spilling, or want of it in places of travelling, where there is none to be had, and instead of Lamp-black, you may use burnt Cherry-stones ground to Powder.

To make a red Ink to carry to any Place as the former. Take the Powder of Brazil finely ground or beaten one ounce, mix with it the juice of Mulberries or Black berries, or for want of them, Water, wherein a little Lake has been dissolved, add Gum-arabick half an ounce, to two ounces of the Powder, wet them to a thickness, and making them up in Balls, use them as the former.

To make green Ink. Take the filing of Copper an ounce, Verditer half an ounce, Gum-arabick half an ounce, and Vinegar half a pint, put them together in a stove or warm Oven, and suffer them to stand three or four days; then stir them together and use the liquid part.

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To make Ink that will make an Impression, as that of Printers, &c. Take of Lamp-black an ounce, or for want of it Shoomakers black, half an ounce of Vitriol, an ounce of fine ground Char-coal; to these add a quart of Line seed Oil, boil them up with stirring over a gentle Fire, till they become of a sufficient thickness; then take out the substance, and move it upon a stone or on a Ink-block with your Muller, it is very fine; and so it will take the impression as of Letters, &c in the nature of Prints or Pictures, &c.

Red Ink of the foregoing kind, It is made with Vermilion and Line-feed Oil, well tempered upon a Stone with a Muller.

To write Letters invisible but by Fire. You must take the Juice of Limon and Onion, temper them well together, and let your Paper be very dry; then write what you think convenient, and send it to the Party you design, who knowing the Mystery before-hand, shall no sooner hold it to the Fire, but those Letters which were blank before will fairly appear.

To make Letters appear by Water. Take well dried Paper, and having dissolved a quantity of Alum in Gum-water, write thereon, and suffering the Writing to dry, dip the whole Paper under Water, and the Letters will appear so much whiter than the rest, that they may be plainly distinguished and read,

To make Letters that cannot be seen or read, but by reading them through the Paper, &c. Take white Lead finely ground with very weak Gum-water, and with it as thin as the temperature of Ink, write upon exceeding white Paper, not very thick; and by that means when it is dry, it cannot be discerned from the Paper, but by looking at a light placed on the other side of the Paper; and then the Letters will plainly appear by denying your Eyes to penetrate them, though the Paper be transparent.

C H A P. V.

Directions for Cleansing, Colouring Gloves, and Perfuming them; the way to scour Ribbands without much impairing the Colour; the Method of Washing, Starching, &c. Silks, as Lute-string, Lawns, Tiffanies, Sarcenets, &c. with other Matters of Curiosity.

Foul Gloves to cleanse without wetting.

TAKE your Gloves, and lay them upon a clean board, and make a mixture of Fulling-earth and Powder of Alum very dry, and pass them over on every side with an indifferent stiff Brush; then sweep off that and sprinkle them with dried Bran and Whiting a considerable time; and so dust them well, the which if they be not extraordinary greasy, will render them clean as at first; but if they be greasy, you must take out the grease with Crumbs of toasted Bread, and Powder of burnt Bone; then pass them over with a woollen Cloth dipp'd in Fulling-earth or Alum-Powder; and so you may cleanse them without wetting, which many times shrinks and spoils them.

To Colour Gloves. Take your Colours suitable to your intention, if dark take Spanish Brown and Black Earth, if lighter, Yellow Oker and Whiting; and so of the rest; mix them with a moderate size, and daub the Gloves over with the Colour wet, and so suffer them to hang, till they dry by degrees; then beat out the superfluity of the Colour, and smooth them over with a stretching or sleeking stick, reducing them to their proper shape.

To make an Excellent Perfume for Gloves. Take Amber-grease a Dram, Civet the like quantity, Orange flower-Butter a quarter of an Ounce; and with these well mixed
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and ordered, daub them over gently with fine Cotton-wool, and so press the Perfume into them.

Another good Perfume on the like Occasion. Take of Damask or Rose scent half an Ounce, the Spirit of Cloves and Mace of each a Dram, Frankincense a quarter of an Ounce, mix them together, and lay them in Papers between your Gloves, and being hard pressed, the Gloves will take the Scent in twenty four hours, and hardly lose it afterward.

To cleanse cast Ribbands, &c. Take your Ribbands and smooth them out, having sprinkled them a little before with fair water; then lay them on a Carpet or clean Cloth at full breadth, and having made a thin Ladder of Castee Soap, go over them gently with a Brush or fine woollen Cloth; then having in readiness Water, wherein a little Alum, and white Tartar has been dissolved, go over them, till you see them clean; and so they will not only be clean, but the Colour will be fixed from further fading, if you suffer them to dry in the shade, and then smooth them out with a Glass Sleek-stone.

To wash black and white Sarcenet the best and surest way. Lay these smooth and even upon a Board or Carpet, spreading a little Soap over the dirty places; make a Ladder then with Castee Soap, and having an indifferent fine Brush, dip it therein, and pass over the Silks the right way, viz. longways, and repeat your so doing, till you perceive that side is sufficiently scowred; and then turn the other, and use it in the same manner; whereupon take it up, and put it into fair Water scalding hot, suffering them to lie, till such time as you have prepared cold water, wherein a small quantity of Gum-arabick has been dissolved, as also, if for white Sarcenet, Smalt, into which you must put them and rinse them well, that done, take them out and fold them, clapping or pressing out the water with your hands on a Carpet that is dry, keeping them under your hands in the like manner, till you find them indifferent dry; at what time in case of the white you must have Brimstone ready to smoak or dry it over, till it is ready for smoothing, which must be done on the right side with a moderate hot Iron.

To wash and starch Tiffanies, &c. In this case, the hems
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of your Tiffanies must in the first undertaking be only soaped a little ; as also the Lace if any be on them ; then having a Ladder of Soap, put them into it hot, and gently move them with Squeezing them only, and not too roughly rubbing them, least they break or crumple over-much ; and when you find they are pretty clean, rinse them in warm Water, in which a little Gum-arabick has been dissolved, keeping them as much from the Air as possible ; this done, make Starch of a reasonable thickness, blowing it as you think convenient, adding a little lump of Alum to be dissolved therein ; and when it is boiled to a convenient thickness, strain it, and during its being hot, wet your Tiffanies therewith gently, doing it with a soft Linnen rag, and fold them up in a clean Linnen Cloth, pressing them therein, till they are somewhat dry, after which, clap them between your hands near a good Fire ; and so finish the drying them over Brimstone, and Shape them to your purpose, and either sleek them over, or gently Iron them.

Lawns may in the manner of the former be ordered : Only observe to Iron them on the wrong side, and using Gum-arabick water instead of Starch, and according to what has been directed for black Sarcenet any coloured Silks may be ordered, abating, or augmenting as you think fit, according to the stiffness or limberness intended, your Gum-water.

To wash and starch Point-Lace, Have a Tent prepared, fix the Lace in it, and draw it pretty streight, then having a Ladder of Casteele soap pretty warm, and with a fine brush dipped therein, rub over your point gently ; and when you perceive it clean on the one side, do the like on the other ; then cast fair water, in which a little Alum has been dissolved to take off the Suds ; at what time having very thin Starch, go over with the same on the wrong side, and on the same side Iron it when dry ; and so with a Bodkin open it, and set it in order.

To clean point Lace, if not over dirty, without washing, fix it in a Tent as the former, and go over with fine Bread, the Crust being pared off, and when it is done, dust out the Crumbs, &c.

C H A P. VI.

Instructions for ordering and framing Curious Wax-work, Imbossing in Silver, or other Metals, making Flowers of Silk carving and casting Imagery in sundry Figures, the Art of polishing, &c.

Wax work its Nature, and how to be managed and performed.

IN this case you must provide your self with the finest Virgin Wax, rarefie it by often melting over a fire, till it become exceeding pliable, and render it the better, so put in a quantity of clarified Turpentine; and having considered your Figure, you must work it in water a little Warm, and move it into a curious flatness; then imboss it in Moulds, or as some will have you, cast it, especially where a curious resemblance of a Head or Face is required, working the rest of the Body proportionably upon sticks or wiers, ruffling as you see convenient the Garments, or pleating them; then having your suitable Colours, paint each part as the property with Water Colours prepared according to what has been directed in painting or limning with those Colours, and with a small Ivory Polisher go gently over those parts you will have to shine; and then having prepared Glasses to cover them, which will give them the greater Luster, place them where you please for Ornament.

As for Birds, Beasts, Trees, Fruits and the like, they must be tempered after their former manner, and reduced in their sundry shapes, not forgetting every one to have its proper and natural Colour; and for the adornment of any Landskip, represent of this kind the Ground, where Grass is required may be Moss, which may in like manner serve for shrubs: But in case of the Leaves of green Trees, they may be Paper or Horn, thin and finely colour-

ed, sharped and twisted upon wires; in order as you see convenient: But as to every particular, of this kind, 'tis only practice can perfect you.

To imboss Plate, as Pewter, Silver, or other Metal. Having your device drawn upon the piece you intend to imboss, you must lay the right side upon a Bed of Bees-wax covered over with a fine Cloth; and so proceed to punch out the Metal with punchers or tools for that purpose, going over every stroak and Line as in case of etching or graving; which done, you must turn the right side, and fill the imbossments with wax, that the hollows may bed close and not sink; then with your fine Tools and Graver polish and work the shapes in their due order by correcting and amending the roughness made by the punching out, and giving fine touches and stroaks where you see it needful, and the Figures will appear very pleasant, being a Performance of great Antiquity.

To work Flowers, &c. in Silk or Silver. Take raw or fleshy Silk of Sundry Colours, comb out the dross or ravel, laying each Colour by it self; then twist and mingle the Colours by placing upon wires, according to the natural form of the flower intended; then comb them out, and fashion them more exactly with your Scissors and Needle; then dip them in Gum-water; and by drawing them through it, and whilst wet, open and shape them with your Fingers; that done, set them to drying in the shade; and in that form they will remain very pleasant and delightful: And thus you may perform them single, or on Brauches with the stalks suitable, &c. You may in this manner form Fruits, and other things very material.

Carving of Images, &c. what is to be materially observed therein. Resolving to carve any curious Figure, you must provide your self with a similitude or likeness; either in Statue, or Portraiture; whether it be for Wood, Ivory or any thing tractable in this nature; and before you proceed to your rough carving with a black or Lead Pencil, or piece of Coal draw as well as may be the true Proportion, Posture and Features, having before reduced the Wood or Stone to some set form; then cut them out as you see it convenient, or let them swell as curiously as may; then with
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smaller Tools proceed to polish them yet finer; and so working by degrees, till you have brought your matter to a proportion; and then remains the Curiosity of fashioning to the Life, and in this you must be curious in eying your Coppy, beginning with the head or upper part; and so descend by degrees, running it over three or four times before you come, either to washing or polishing, that no unseemly knob or other deformity may appear, &c. And in case any Statue or Image, either cast or carved, require to be painted in lively Colours, the rule for painting in Oil ought as well in the mixtures as laying on, to be observed.

In casting of Images or Figures, the curiosity lies in forming the Mould, and bringing the stuff to a fineness, which if done in beaten Chalk, Terace, Plaister of Paris or the like, they must be mixed with Gum-water, the better to strengthen them, but in case of Lime, &c. it needs not; and then no more is required than bringing the stuff to a fit temper or stiffness of dough; and the Mould being to clasp in the middle, and take asunder, fill it with the Material, and squeeze it hard in a Vice, having rubbed the out-side of the Mould before with dry whiting or chalk finely beaten, to prevent the sticking; then take it out, and set it to dry in a place where there is a stove; and when it is thoroughly dry, you may glaze or colour it at Pleasure,

If you design any Figure in Metal, and will not be at the trouble of imbossing it in the expanse; and so soldering it together, thereby rendering it hollow as in fine Metals 'tis often done; then must you make your Mould of Brick, Chalk, fine Clay, or the like; and place it, when dry and firm in a Bed of Sand, or in the Ground, keeping it close together; have then your Metal rarefied or purged from dross by well refining, and a trough or spout layed from the Plug of your Melter; and when the Metal is melted and skimmed, suffer it all at once to run with what speed it may into the Mould, that every part taking hold of each other whilst liquid, the whole Mass may the better incorporate and render the thing designed without flaw or scaling; suffer it then to be thoroughly cold before you take it out; which done, polish it by taking off the rough side,

and proceed with your tools to rectifie what is un-
seemly.

To polish Marble or any curious Stone. Take fine Sand, and the Powder of Alabaster, polish it with a Polisher; and then suffer it to be laid over for a time with Oil; after that calcine, or burn Egg-shells, and with the calcination thereof, rub off the Oil and polish it, and it will be of a lasting gloss, &c.

To make any Writing on Parchment or firm Paper, decay and become unlegible in a short time. Take Quick-lime, and mix with it the white of an Egg, and rub over with the said mixture the Parchment or Paper, when you intend to write; and although the writing for a time will seem fair, it will in a short time decay, and look so faint, that it can by no means be read.

To make new writing look old, and of a long standing. Take a dram of Saffron, and infuse it into half a Pint of Ink, and suffer it to warm over a gentle fire, and it will cause whatever is written with it to turn yellowish and appear as if of many years standing.

To make a curious Purple Ink. Take a quarter of an ounce of Lake and half an ounce of Indjco, and bruise them small; which done, warm half a pint of water, and infuse into it an ounce of Gum-arabick; then put the Colour in, and shake them well together.

Take Blots, or Letters out of Paper or Parchment. Take an ounce of Alum, dissolve it in a quarter of a pint of water over a gentle Fire, and drop a drop of it warm as you see occasion upon the spot, and suffering it to lie for a time, take it up again with clean Cotton Wool on which you have breathed to moisten it, and the business in once or twice doing will be effected; or Take a little Spirit of vitriol and put on with a feather.

To render Writing very fair. Take Gumsandrick, bruise and sift it very fine, dip into it Cotton-Wool, and gently rub therewith your Paper or Parchment; and this is called the pouncing it, and is often used by School-Masters to set off their Copies to advantage.

To write Letters like Gold without the help of Gold. Take of Vermilion half an ounce, Gum-armoniack the like quantity

tity, bruise and mix them with the whites of a couple of Eggs, and temper them in water to a thinness, that you may write therewith; and then your writing being dry, glaze it over with a Polisher.

To write Letters that will appear like Silver, without any Silver. Take of Block-tin, Quick Silver, and the whites of Eggs, each an ounce, melt the two former, and having ground them fine and small, put them to the latter, and mix them with Gum-water to the thinness of Ink, and so proceed to write, polishing your writing, when dry.

How to prepare your Shell-Gold, and write with it. Take the ragged cuttings of Leaf Gold, grind them upon a curious smooth and clean stone with Gum-water and a little Alum Powder; and when they are well incorporated, drop of the substance into small shells; and when you use it, temper a little fair water to bring it to a thinness; and having written with it your Pleasure, suffer it to dry; and then polish the writing, &c.

To make a good red sealing wax. Take of Bees-wax a Pound, fine Turpentine three ounces, red Lead, or Vermilion finely ground an ounce and a half, Olive Oil an ounce, melt well the Wax and Turpentine, adding an ounce of Rosin fine in powder; and when they are well melted; and the dross taken off, put in the Lead or Vermilion, and stir them well together, till they are well incorporated; and so make them into what form you please for your use.

To make black Wax. Take of Lamp-black or black Earth an ounce and a half, Turpentine and Rosin of each four ounces, of Bees-wax a pound, incorporate them as the former with Oil.

To make green Wax. Take Verdegrease an ounce, and all the other Ingredients, except the colouring as the former, ordering it in the like manner.

To make golden or transparent Wax. Take clarified Rosin, four ounces, Turpentine two ounces, Bees-wax four ounces, Olive Oil two ounces, melt them well together; and scatter in the melting disordered or shattered Leaf Gold, and suffer it to mix and incorporate; then polish it over, when made

made into form, and the Gold will appear in the transparency.

Sealing Wafers how to make them. Take fine Flour sifted or boulded, that no bran remain therein, mix with it the Glare of Eggs, a quantity of Ising glass so called, and a little Yest, mingle the materials, beat them well together, spread the batter, being made thin with Gum-water on even Tin Plates, and dryed in a Stove, cut them out for your use.

C H A P. VII.

Artificial Vinegar, how to make it; Fire in Chimneys, how suddenly to extinguish it, blowing up Ships under Water, blowing up Houses, and weighing of Vessels that are sunk, how to effect them, with Directions for Dialling and Gauging, &c.

A way always to be provided with Vinegar for Sauce wherever you Travel.

TAKE the Blades of green Corn when young, beat them exceeding small in a wooden Vessel, then strain out the juice, and take the remaining substance and steep it in strong White Wine Vinegar, or the juice of Limons, and suffer it gently to warm over the Fire, and so let it stand in a warm place till the Vinegar be consumed, and then make the Matter up into Balls, and put them into a Box and dry them, and so coming into any place where Vinegar is not to be had, scrape a little of the Pouder into a little Water, and it will afford you when heat over the Fire or stirred well together a very good Sauce.

In case of the firing of a Chimney, the means whereby it may presently be extinguished. Take an Ounce of Gunpowder and a quarter of an Ounce of Brimstone fine beaten, wet them

them with Water and make Wild-Fire thereof, and throw it in small pieces into a small Pan of Charcoal or Coal Fire, that the Smoak may go directly up the Chimney, and it will cause the Soot the Fire has taken, instantly to fall by parcels, till there be none left.

To break or blow up a Ship or Vessel that is sunk, though lying some Fathoms under Water. To do this you must find how the Vessel lyes, and if you can conveniently let down a Barrel or more of Powder in a Stanch Cask, with a Cane or Leather Pipe let into it, and pitched round, so that it may, when the Barrel is sunk to the lowest, appear with the uppermost part above Water, then having a Boat ready, and a red hot Bolt of Iron with a pair of long Pincers, drop it into the Cane or Spout, so that it may fall into the Powder, at what time make off as fast as may be, and you will perceive immediately a trembling of the Water, and after that a Smoak to burst out, at what time Planks, Goods, or any thing capable of floating will rise, the Vessel being broke by the force of the Powder.

To weigh any Vessel that is sunk, the best way. Lash a couple of Vessels together, and grapple the Vessel sunk, fastning the Grapples, a Pole lying across the two Vessels, the said Vessels being filled and low sunk by their weight, then empty them, that they may rise, and they will cause the sunk Vessel to rise with them as far as they rise, then Tow them as near to the Shoar as you can at high Water, and at low Water the sunk Vessel will appear above it, and you may empty it at your pleasure; and in this case twenty Tun of Vessels, Floats or empty Casks above Water, will raise a hundred Tuns under Water.

To blow up Houses to prevent the progress of a Fire, the best and safest way. If so it happen the House be Timber, and you would throw it off from the Fire, place your Barrel of Powder under the main Girder on the contrary side you intend to turn it, and over it a Beam or piece of Timber, and fix in that another upright, scotch the Barrel, on either side lay a Train upon Boards, covering it with Cloth to prevent its taking Fire before you intend it, and then having a piece of Match fastened upon a Linstock, give fire to your Wild-Fire at the end of the Train, and so retire.

If

If you would take a Timber or Brick House upright, place the Powder in the Cellar under the main Beam in the manner aforesaid, just in the middle, or if there be no Cellar, bed it about as much as may be, and it will take it directly up from the Foundation, and then suffering it to fall directly down, it will break in pieces, at what time the Timber may be drawn away to prevent the Fires over-running it, and so by that means creep to the next Building, and render your Undertaking fruitless.

To make a Sun-Dial upon the Ceiling of a Room, and convey the Beams of the Sun to it. Prepare the Ceiling exactly level, by raising it with fresh Plaster, if there be any defect, Draw your Dial according to the form of a Horizontal Dial, making the Lines and distance of equal frame, set up your Gnomon or Shadower so that you may move it, and leave blanks for the Figures, this done, conveniently place a Looking-Glass, or burnished piece of Iron or Steel, so that it may reflect the light of the Sun upon the Dial intended, then make it by another Dial, how the Light moves, which it will do with the Sun, and according to that, being a true one, place your Figures, then take off the Gnomon or Shadower, and lay it aside, fixing the Glass or burnished Steel, that it may remain unsubject to be removed or shaken, and you may at any time, without stirring out of the Room, know whilst the Sun is upon the Dial what it is a Clock.

To make a Dial in the Glass of any Window that has the benefit of the Sun. Take a curious, square, smooth Pane or Quarey of Glass, fix it even with strong borders of Lead in the Window, and set up the Gnomon siding, slanting, or direct, according as the Sun has power upon it, then by a Watch, Clock or other true Dial, mark how the Shadow moves to the time of the day with the point of a Diamond, and accordingly draw the Lines from the Center, and frame the Figures in due proportion and distance.

Directions to Measure or Gauge any round Cask or Vessel, &c. In the first place multiply the half of the thickness in Inches by half the Circumference, and that Product by the length in the Inches, the last Product for Ale divide by 288, and the Quotient shews the number of Gallons in the

the Barrel, and to bring these Gallons into Barrels, divide the Quotient by 36, for so many in case of Beer a Barrel contains; but in case the Vessel very much bellies in the middle, measure but half of it to the Bung, and work as before, and adding the Products together you will have the true Account.

C H A P. VIII.

Another Treatise of making sundry Inks.

To make a Pouder upon which you may write with Water, &c.

BRuise to Powder a handful of Galls, half an Ounce of Vitriol, and the like quantity of Gum-Arabick, and Gum-Sandrick; mingle them finely sifted together, and when you have occasion to write, rub over your Paper with a little of it laid upon Cotton-Wooll; and then having sufficiently smoothed it, take water and write upon the said Paper; then suffering it to dry, it will take a black impression, occasioned by the Powder, as if it been written with Ink.

Another curious Powder Ink, fit for Travellers, &c. or the London Powder Ink. Take ten Ounces of Nut-Galls, bruise them well, three Ounces of Roman Vitriol, Gum-Arabick and Roch-Alum, of each an Ounce, make them into fine Powder, sift and dry them; at which time put the Powder up in close Boxes or Papers, and when you have occasion to use it, put a little quantity into a good quantity of water, and shake it well about, and it will instantly change the Colour of the Water, and at length become good Ink; that is, in less than two hours space; by which means any Person without giving himself considerable trouble of carriage, may be furnished at all times.

Another curious Powder of the like Efficacy, how to make, and lately known by the White Powder-Ink so much coveted of late,

late, &c. Take Gum-Sandrick two Ounces, beat it well to Powder, and sift it through a fine sieve, and as much of *Chalcantho*, so called by the *Latins*, of which you may furnish your self at the Druggists; mix them well beaten and pulverized; and a quarter of an Ounce of this, or little more, will turn a Pint of Water or Vinegar, into a curious writing Ink in a very short time.

Mathiolus's Direction for making a curious and lasting Ink, &c. Take five Ounces of Galls well bruised, *Roman Vitriol* three Ounces, Gum Arabick two Ounces, Bay Salt a Dram, or instead of it a quantity of Alum, mix them well together in a new glazed Earthen Pot, and pour upon the Mixture White Wine, very strong and hot, about five Pints, and suffer it, the Weather being hot, to stand in the Sun for the space of fifteen days, or it may be done in a Stove Oven, or in the Chimney Corner, frequently stirring it about, and so pouring out the dross, an excellent Ink will be had, not subject to change by time, nor alter its Colour.

Two excellent ways of speedily making Ink, &c. 1. Take Vitriol and Gum Arabick, of each an Ounce, of Galls well broken a like quantity, of sharp Wine, or Wine Vinegar, ten Ounces, and suffer them to stand together for an Hour, sometimes shaking them, they will turn the liquid part exceeding black, and render it fit for your use.

2. Take of Galls half an Ounce well bruised, mingle with it a like quantity of Gum Arabick, and of *Roman Vitriol* eight Drams, put these into eight Ounces of White Wine pretty hot, and in as short a time as the former, a perfect Ink will be made.

How to make a Black that will not only serve for Ingrossing, but Painting, &c. Take Copperas half an Ounce, bruised Galls an Ounce, Lamp black an Ounce, Gum Arabick half an Ounce, mix them with a Pint of Wine or Vinegar, set them over a gentle Fire, and suffer them to simmer till a half part be consumed, and what remains will render an excellent thick and black Ink.

The Famous George Machijus's Receipt for curious Writing Ink, &c. Take of Galls three Ounces, *Roman Vitriol* two Ounces, Gum Arabick half an Ounce, and having well bruised

bruised them infuse the Galls in two Quarts of White Wine for the space of eight days, stirring them well about each day, and three days after the putting in the Galls put the Gum in, dissolved in a little Wine by it self before it be put in, three days after the Galls and the Vitriol, as long after that, stirring them at sundry times, and at the termination of eight days the Ink will come to a full and curious perfection.

To make a kind of Ink to write obscurely, and not to be read, unless the Paper whereon the Writing is, be held to the Fire. Take that which is vulgarly called Sal Armoniac, and Nitre, of each half an Ounce, mingle them with the juice of Limon over a gentle Fire, and having refined the liquid part from the dross use it when cold, and so holding the Paper when it is written on, to the Fire, the Letters will fairly appear, or otherwise it will not, &c.

To take away spots or defects out of Writing, either on Paper or Parchment. Take Roch Alum burnt half an Ounce, as much of the Flower of Brimstone, and being finely in Poulder wet the Paper a little, and put a small quantity of the Poulder upon the place, rubbing it gently with your Finger, and the Maculation will disappear. And thus much for the Treating of Inks, &c. wonderful necessary and useful on all occasions, and profitable to those that will undertake to make them for Sale.

A Water that will make a Man see in forty days, tho' he has been Seven Years Blind, if he is under Fifty. Take Fennel, Smallage, Rue, Betony, Vervain, Eyebright, Pimpernel, Celidon, Sage, and a Quarteron, and wash them clean and stamp them, do them in a Mashing Pyn, and put to them a Quart of good White Wine, and thirty Pepper Corns powdered, six Spoonfuls of live Honey, and ten Spoonfuls of a Man Child's Urine that is innocent, and mingle them together, and seeth them till half is wasted, then strain it and clarify it, and put it into a Glass Bottle well stoppt, and put thereof with a Feather into the blind Eyes when going to Bed, and in forty days he will see; its good for all manner of blind Eyes; also Wild Tansie Water is good for the Eyesight, so is eating Fennel Seed.

Rish Closet of Secrets.

C H A P. IX.

The Art of making Washes, and other Beautifying Materials, for taking away Sunburn, Morpew, Freckles, Roughness of the Skin, and restoring a curious Complexion; as also Whitenening the Teeth, Enlivening the Eyes, Curling and Colouring the Hair, &c.

A Water to restore a faded Complexion.

TAKE the Flowers of Rosemary, Comfrey, and Camomile, boil them in White-wine, and wash your face and hands therewith morning and Evening.

To create a very fair Complexion. Take two ounces of white Tartar, burn or calcine it, then quench it in the distilled Water of Roses, and wash the face with it.

To render a fresh and comely Complexion. Take an ounce of the Oyl of Sweet Almonds, the like quantity of the Oil of Myrrh, bruise in them of the Powder of Gum-Sandruck a grain, and with the whole mixture, rub and anoint the face.

To render the Skin clear, and of a very fair Complexion. Take Bean blossoms, and the Water that distills from the Vine, with the Flowers of Fumitory, distill them, and make a Wash with what proceeds there from.

To make the Skin smooth and shining. Take of the marrow of Swines-feet an ounce, Oyl of Nutmegs a quarter of an ounce, Deers suet half an ounce, Oyl of Bay berries two ounces, make them into an Oyntment over a gentle fire, and anoint the face, hands, or any part of the Body therewith.

To remove Freckles, Tan, or Sun-bath. Take the juice of Bur-dock leaves and Limons of each a like quantity, mix them together, and add half as much Oyl of Camomile, a little Rye meal, and the Gall of a Cock or Capon, make them

them into an Ointment, and anoint the place therewith, and in a short time the defect will be removed.

To remove Pimples or Redness. Take an Egg and roast it hard, then take out the Yolk at the top, and fill it with Copperas, and put it close covered in the Embers, till the Copperas is melted or become water; then pour out the water and bath the Face with it; but if it be too sharp you may allay it with the water or juice of Celandine; and in often using it, your Expectations will be answered.

To remove the Redness in a face, &c. occasioned by Scalding, Blasting, &c. Take a handful of the bark of Elder, as much Rue and the roots of Scabious, with an ounce of the Flowers of Cammomile; bruise them together, and boyl them in a pint of Milk, half a pint of Olive-Oyl, and adding a quarter of a Pint of Verjuice, till the liquid part become thick as an Oyntment, and then strein it out; which being cooled, anoint the place therewith morning and Evening.

To take away unseemly Warts or Moles not too deep impressed. Take Rhubarb a drachm, Camphora the like quantity, the Oyl of Petrolum half as much; and an ounce of the juice of Houfleeck, bruise and beat these in a quarter of a Pint of Vinegar over a gentle fire, and anoint the place or part therewith, and in often so doing, you will find your desire effected.

To make a swarthy Complexion fair and clear. Take the Liver of a Goat, dry it to powder in a Stove or Oven, then steep the Powder in White-wine, adding a quarter of a Pint of the Juice of Celandine, an ounce of Coriander-seeds; and as much of Fennel, decoct or boyl them over a gentle fire, and with the liquid part anoint or bathe the face, &c, and so continue to do often, and it will remove the cholerick humor occasioning swarthiness.

To brighten and enliven the Eyes. Take Vervein, Pelitory of the Wall, Smalage, and Betony with the Flowers of Eye-bright, distil them and wash the Eyes with the water morning and evening, and it will not only render them bright and clear, but give a true prospect and dimension to the decayed sight.

To know if a Woman be with Child. Let her make water in a brass Basin, and one night let a steel Needle be put in

intt, If she is with Child the Needle will be full of Red Spots, if not it will be black and rusty, so Cancerated, *Mizaldus* saith it was proved, *Wicker*.

To make Bloom-water, an excellent Beautifier upon all occasions. Take the Blossoms of Peaches, Baum, Lavender, Cotton, and Rosemary, steep them in White wine, distill them, and the Water will prove an excellent Beautifier.

To make an excellent Pomatum for the hands and face. Take Sheeps marrow an ounce, Oyl of Sweet Almonds the like quantity, the juice of Smalage a quarter of a Pint, Bean flour half an ounce, make them up into an Oyntment, and anoint the hands and face warm therewith, and it will make them plump, soft, and free them from cracks, chops, or roughness.

An excellent PASTE for the Hands. Take the Flour of sweet Almonds an ounce, Rye-meal two ounces, white Starch an ounce, and Milk half a pint, with which make these before-mentioned into a Paste, and that Paste into Balls for your use.

To find if a Woman is painted with Red. Chew some Cum-in seed or a Clove of Garlick, and it will vanish: Its probable you must breath in her face, *Wicker*.

To soften the Skin, and render it fresh, an Oyl, &c. Take of the Oyl of Nutmegs an ounce, Ambergrease a drachm, Oyl of Cammomile an ounce the juice of Comfrey half a quarter of a pint, make them into an Oyl or Oyntment, over a gentle fire, and supple them into the Skin very hot, and in often so doing, it will wonderfully beautifie and cause an excellent flavour, &c.

An excellent way to sweeten the Breath. Take Sal Armoniack a drachm, Beaten Ginger two drachms, the Spirit of Cloves a drachm, Coriander-seeds in fine Powder a quarter of an ounce, Oyl of Mastic a drachm, bruise them together, and make them up into a Ball, and each Morning scrape about the quantity of a large Pea into a glass of Wine or Beer, and drink it off.

To make Hair grow. Take of the Powder of Bithwort-roots a drachm, of the juice of Fennel half an ounce, Ivy-berries dried and beaten into powder an ounce, the juice of Housleek half a quater of a Pint, and of White-
Wine

Wine a pint, boyl these over a gentle fire to a half consumption of the liquid part, and wash the place deficient, and in a short time if that part be subject to Hair, it will cause it to grow and increase.

To take away Hair. Take the juice of Hellebore or Bears-foot half an ounce, as much of that of Burdock roots and the roots of Cuckowpintles, and anoint the place with it warm, and by often so doing, the Hair will fall off.

To make any coloured Hair black, or of a dark Colour. Take Burnt Ivory ground to Powder a quarter of an ounce, Soulters Ink the like quantity, the juice of Hemlock a quarter of a pint, incorporate them over a gentle fire till the moisture be near consumed; then add Black lead powder to dry up the rest, and with this rub your Hair or powder it, and it will be a curious black, as likewise lasting, if before you wash your head with White-wine wherein Plantane roots have been sod.

To make Hair Curl. Take the Powder of Elecampane Roots well dried, and as much of Alum in fine Powder, wet your Hair a little with Water wherein Raisons have been steeped, and so sprinkle on the Powder with a fine Sprinkler, that it may be all over, then with a pair of Curling Irons somewhat hot turn it up in Ringlets under a Cap, &c. and so let it dry, as likewise continue for the space of a Night, and next Morning Comb it out, and the Powder that remains will not only fly away, but the Hair will fall into curious Curls, and so continue without any further trouble for a very long time.

A way speedily to take away the Spots occasioned by the Small-Pox. Take half an Ounce of Copperas, and dissolve it in the Juice of Limons, and anoint the Spots with it when warm, and their redness will soon disappear.

To prevent Pittings. When the Distemper begins to appear rub the Face over gently with Honey, Oil of Roses, and a little Alum dissolved and well mixed together over a moderate Fire, and in so doing every other day the Pits will be prevented, if the Party uses no violence to himself, by scratching, &c.

To whiten Teeth. Take a piece of fine Pumice-stone, grind it to Powder, adding to that Powder a little quantity

of Alum Ponder, and by often rubbing the Teeth with it they will if sound be as white as Ivory ; or rub your Teeth with Brick-Dust, or Flanders-Tile, laid on a wet Linnen Rag.

CH A P. X.

A Miscellany of rare and curious Secrets not yet toucht upon.

How to separate Gold and Silver from other Metals.

TAKE Mercury and put it in a Melting or Refining Pot on the Fire, adding some Varnish-Glass beaten to powder, and being finely mixed lay it in powder upon the Metal that is gilded with Gold or Silver, and set some hot Coals under it, and it will take off the Gilding, and render the Metal as if it had never been Gilt, and in this Case you may save the Gold and Silver, if of value, by putting to it Quicksilver, which will attract it into a body.

To kill or allay Mercury or Quicksilver. Put which of these you design in a Mortar of Iron or Brass, adding some Olive Oil, mix them together as well as may be over a gentle Fire, adding more when it begins to bubble strong Wine Vinegar, and in so using the aforesaid Materials, they will become so hard as easily to endure the Hammer.

To make an Egg fly in the Air. Fill an Eggshell with May Dew, and set it in the hot Sun at Noon-day, and the Sun will draw it up.

To boil Gold and Silver in the way of cleansing. Take Tartar bruised to powder, put to it a considerable quantity of Spring Water, and so being boiled up over a quick Fire pour in the Plate, and let it continue for a considerable time.

To soften Gold or Silver. Take Sublimate Mercury, Sal-Armoniack, of each a like quantity, and when the Metal of

of either sort is melted put a small quantity of the powder into it, and so suffer it to operate thereon, if Gold put more, if Silver less.

To soften Bone or Ivory. Take Bone or Ivory that is hollow, and take the Juices of Alexander, Milfoil, Radish Roots, Horehound, and sharp Wine Vinegar, and fill the Cavity, after which lay it near a gentle Fire, that the heat may infuse, and in suffering it so to do, in a little time it will mollifie the hard quality.

Experiments of other Natures, viz. how to keep Grapes fresh all the Year. Gather the Grapes in a fair day, when no wet or moisture is upon them, cleanse them from those that are any ways perished, and let them steep a while in white Muscadine a little warm, after which dry them, and stop them up in new Earthen Bottles, setting them in a cool place, free from the Sun, or too much Air, and they keep without perishing.

To increase Pigeons in a Dovehouse. Hang a Man's Skull in the Pigeon-House, and they will increase and live quietly, Albert.

To make Mellons, Cucumbers, or such like Fruit ripen by Art. Boil Wheat-bran in Water and a little fine Mould, and water the Roots of the Plants with it Morning and Evening, setting them in hot beds, and covering them from colds and blasts with Pots, Glasses, &c.

To make Trees bear Fruits of any Colour. Bore a hole in the Body of the Tree, at such time as the Sap begins to rise, and plug it up close, and you will perceive what liquid Colour you put in, the same will tincture the Fruit, and give it a participation of its hue.

To kill or drive away Fleas or Buggs. Take the Juice of Rue and the Gall of an Ox, mix them together, and anoint the pest and frame therewith, and strow in the Mat Powder of Southern wood and Wormwood.

To catch Birds with your Hands. Put any Corn into Wine Lees, or Juice of Hemlock, and cast it to Birds, and they will eat it and be Drunk, that you may take them with your Hands.

To make any Person that is very hoarse, or speaks inwardly, have a very clear Voice. Take the Flowers of Elder, dry them

them in the Sun, and so order it that without taking wet they may be beaten to Powder; which done, keep the Powder in a Glass, and when you would use it, put as much as will lie upon a six-pence, into a Glass of Wine pretty warm, and drink it off.

To make Letters that will soon vanish. Take Aqua-vitæ, dissolve a little Camphire in it, and put to them the Ashes of burnt Straw well mingled or tempered together, which for a time will produce a fair Writing, but at your pleasure you may wipe it off the Paper or Tablet, nor will it be long ere it decays of it self.

To renew Letters decayed. Boil a few Galls in Wine, and wipe over the faint Letters with a Sponge dipped in the Juice, and they will appear fresh and in full lustre as when written.

To renew the Marks in Knives that are in a manner worn out. Polish them well with Powder of Emeril and Oyl; after that, cleanse them with Chalk to a brightness, then wet the Blades in Lime Juice and Tanners water made with Vitriol, and they will cause the Marks to appear exact and fair, and this way you may damask them.

How to grave a Porphyry Marble without an Iron Tool. Take a small quantity of sublimate Mercury, a like quantity of Sal Armoniacum, with as much Verdigrise, distil them in a Retort of Glass, calcine a small weight of Tin and Firestone, and some Sal Gem, distilling them over three times in sharp Vinegar, and so making a ground of Wax, Rosin, and Turpentine, lay it on the Stone, as in the Case of Etching, and when you have drawn with an Iron point what you intend, pour on the Water, and suffer it to continue till it has corroded the Stone, according to what you drew upon it.

How to make Water rise by heat, &c. Let there be a Vessel above, either of Brass, Clay, or Tin, and a Pipe in the middle of it, that may descend into the Water below, so fastned that it takes not Air, then let the Vessel above be made hot, and it will by means of the Airs being rarefied by the heat attract the Water to it.

To catch Fish presently. Make up Balls with dried Barly Meal, and cast them to the Fish. *Wicker.*

C H A P. XI.

Another Miscellany of rare and curious Experiments, useful, profitable, and also together pleasant, &c.

To cause Water (contrary to the nature thereof) to ascend.

PRepare a Bason with a Pint of Water in it, or thereabouts, then take an Earthen Pot or Jug with a round belly (fitted for this service) and light a piece of Paper, cast it into the Jug flaming, then turn quickly the mouth of the Jug downward, and set it on the midst of the Bason of Water, it will suck up all the Water, if it be not more than it can receive and contain within the belly thereof.

To carry a Jug or Earthen-Pot sticking without any thing unto the Palm of the Hand. Take a piece of Paper, set it on fire, and cast it flaming into the mouth of the Jug, presently clap the Palm of your Hand on the mouth of the said Jug or Pot, not hollow, but plain and smooth; the Jug will not fall from your Hand, but you may walk many Paces, and carry the same sticking unto the Palm of your Hand, unless by violence you pluck it away.

To break a Stick placed upon the brims of two Glasses, and not break the Glasses. Place the Glasses on a smooth stone of an equal height, and put the stick upon them; then take a battoon or cudgel, and therewith strike upon the midst of the stick perpendicularly, or downright; so may you break the stick, and not hurt the Glasses.

To take the impression of any Seal. Melt a little Brimstone, casting in some Ceruse or white Lead, put this mixture on the Seal, strengthening it with a small peice of Paper, a little bigger then the impression is; being cold, take it off, and you will find the print of the Seal thereon.

How to write a Letter secretly, that cannot easily be discovered or suspected. 1. Write your mind at large on one side
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of the Paper with common Ink, and on the other side with milk, that which you would have secret; and when you would make the same legible, hold that side which is written with Ink to the fire, and the milky Letters will shew blewish on the other side. 2. Rule two Papers of one bigness with lines of an equal distance, make the one full of Glass windows, through which you must write your mind upon the second Paper, then fill up the spaces with other words at your pleasure; but if all were made to hang together in good sence, it would carry the less suspicion. Each friend must have one of these cut Papers to read all such Letters, for without the Paper it will trouble a good Decypherer to read the Letter.

Of the Dyal upon the Fingers and the Hand. Is not a commodity very agreeable, when one is in the field, or in some Village; without any other Dyal, to see only by the hand what of the clock it is, which gives it very near, and may be practised by the left hand in this manner.

Take a straw, or like thing, of the length of the Index, or the second finger, hold this straw very right between the thumb and right finger, then stretch forth the hand, and turn your back and the palm of your hand towards the Sun, so that the shadow of the Muscle which is under the thumb touch the line of life, which is between the middle of the two other great lines, which is seen in the palm of the hand; this done, the end of the shadow will shew what of the clock it is; for at the end of the great finger it is 7 in the morning, or 5 in the Evening; at the end of the ring-finger it is 8 in the morning, or 4 in the evening; at the end of the little finger, or first joint, it is 9 in the morning, or 3 in the afternoon; 10 and 2 at the second joint, 11 and 1 and at the third, and mid-day in the line following, which comes from the end of the Index.

How to make Water boil and sparkle. Take a glass near full of Water, or other liquor, and setting one hand upon the foot of it to hold it fast, turn slightly one of the fingers of your other Hand upon the brim or edge of the Glass, having before privately wet your Finger, and so passing softly on with your Finger in pressing a little, for then first the Glass will begin to make a noise, secondly the parts of
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the Glass will sensibly appear to tremble, with notable rarification and condensation, thirdly the Water will shake, seem to boil, fourthly it will cast it self out of the Glass, and leap out by small drops, with great Astonishment to the standers by, if they be ignorant of the cause of it, which is only in the rarification of the parts of the Glass, occasioned by the motion and pressure of the Finger.

Of the Play at Nine-Pins. You will scarce believe, that with one Bowl, and at one Blow, playing freely, one may strike down all the Nine Pins at once, yet from Mathematical Principles it is easie to be demonstrated, that if the Hand of him that plays was so well assured by Experience, as Reason induceth one thereto, one might at one Blow strike down all the Nine Pins, or at least seven or eight or such a number as one pleaseth.

For they are but Nine in all, disposed or placed in a perfect Square, having three every way; let us suppose then that a good Player beginning to play at 1, somewhat low, should so strike it, that it should strike down the Pins 2 and 5, and these might in their violence strike down the Pins 3, 6, and 9, and the Bowl being in motion may strike down the Pins 4 and 7, which 4 Pin may strike down Pin 8, and so all the nine Pins may be striken down at once.

Any Numbers under 10 being thought upon, to find what Numbers they were. Let the first Number be doubled, and unto it added 5, and multiply that Sum by 5, and add to it 10, and the next number thought upon; multiply the same again by 10, and add to it the next number, and so proceed.

Now if the last Sum be told, mark if one Number was thought upon, then subtract 35 from it, and the first Figure in the place of Tens is the Number thought upon; if he thought upon two Figures, then subtract 35 also, and the 2 also, the said 35 from the last Sum, and the 2 Figures that remain are the Numbers thought upon; if he thought upon 3 Figures, then subtract 350, and then the 3 first Figures are the Numbers thought upon, &c. *Example.*

If one thought upon these Figures, 5, 7, 9, 6, double the first, which is 5, and it makes 10, to which add 5, it makes 15, this 15 multiplied by 5 makes 75, to this 75 add
10,

10, it makes 85, to this 85 add the next Number, viz. 7, it makes 92, this 92 multiplied by 20 makes 920, to which add the next Figure, viz. 9, it makes 929, this multiplied by 10 makes 9290, to which add 6, being the last number, it makes 9296, from which subtract 3500, and there resteth 5796, the four Numbers thought upon.

Now because in the Figures 9296 the two last Numbers are like the two thought upon, to avoid suspicion, bid him add 12, or any Number to it, and then it will not be so open; as for Example, the 12 being added to 9296 it makes 9308, from which if you subtract 3512, there will remain 5796, the four Figures thought upon, as before.

Two Persons thinking two Numbers, the one an even Number, and the other an odd Number, to divine and tell who thought the one, and who the other. Bid the first Man to double his Thought, and the second Man to trebble his, then to add both Numbers together, then bid the one of them cast away half, which if he can do the Total is even, otherwise odd.

The Total being even,
1. *Even.* The first Man thought odd,
The second Man even.

The Total being odd,
2. *Odd.* The first Man thought even,
The second Man thought odd.

Example.

1 Man.		2 Man.	
Thought	15	Thought	24
Doubled is	30	Trebbled is	72
30 and 72 added together is			102

The Total is even, because half may be cast away.

The Total being even, the conclusion is, the first Man thought odd, and the second Man thought even, &c.

1 Man.		2 Man.	
Thought	34	Thought	45
Doubled is	68	Trebbled is	135
Add 68, and the Total of both is			203
			Cast

Cast away half. *Answer*, I cannot.

The Total therefore is odd. The Total being odd, the Conclusion is, the first Man thought even, the second Man thought odd.

Four Men thinking on four Digit numbers, (which are from 1 to 9) to tell what the first, second, third and fourth Man thought.

This Conclusion findeth out any number thought, under 10000.

Four Persons standing in rank, admit the first think 8, the second 7, the third 6, and the fourth 5.

Let the first Man double the number of his thought, and add 5 thereto, then multiply the whole by 5, and add 10 to the Product, noting the Total.

Bid the second Man demand of the first Man his total number, which being given him, let him add unto the same his Thought, and give the Total to the third Man.

Then bid the third Man to affix or set his Thought by the number given him, and put it one place towards the right Hand, and give the total thereof to the fourth Man.

Last of all, bid the fourth Man set his Thought thereby, a place yet to the right hand, in the first place; and add the number of 25 unto it; that done, demand of him the total number, which being given you, subtract out of it 3525, the number remaining will discover the four Mens Thoughts.

The Digit on the left Hand sheweth the first Mans Thought; the next Digit towards the right Hand is for the second Mans Thought; the figure in the second place representeth the third Mans Thought, and the figure in the first place giveth the fourth Mans Thought.

Example.

1. The first Mans Thought 8, which being doubled is 16, and 5 added thereto is 21, which multiplied by 5 is 105. Whereunto add 10, the whole is 115

2. Secondly, let the second Man add in 7 (his Thought) it stands thus, 122

3. Let the third Man set his Thought a place to the Right Hand thus, 122 6

4. Let the fourth Man place his Thought a place yet to the Right Hand, thus, 1226 5

Also bid him add in 25, and it maketh 122 0

Demand the Total, it is 122 0

Which being given you, deduct 35 5

The remains will be 87 5

Ans. The first Man thought 8, the second Man thought 7, the third Man thought 6, the fourth Man 5.

Example.

First Man's Thought 8
Doubled is 16, and 5 added 21, multiplied by 5 is 105,
and 10 added in is 115

Second Man's Thought added in is 7

The Total is 122

Third and fourth Man's Thought set thereby 122. 6. 5

25 added makes 12290

Substract 3525

Particular Thought 8. 7. 6. 5

Of the four Men 1. 2. 3. 4

To light a Fire by the Sun. Take a round Vial of Glass full of Water, set it unmoved against the Sun, and when it is directly set against the Sun, lay behind the Vial some combustible Matter, in the Line that passeth thro' the Vial, it will take fire, to the Admiration of all, especially to see Fire rise out of Water.

How to prolong Life. Cardan says that *Ambrosia* will do it to the longest date, and that *Italy* produceth this Herb, that it smells Sweet, hath Leaves like Rue, with a long and slender Stalk. *Wicker's Secrets.*

To live long. All Creatures that are long liv'd are good to lengthen Man's Life, and all that are Restorative serve to renew our Lives and restore Youth; also its believed that a Bears Blood suck'd with ones Mouth from a fresh Wound made will make a Man strong, because that Creature is strong. *Wicker's Secrets.*

To make the Husband and Wife always agree. Let the Man always carry with him a Harts Horn, and they say you shall always have Peace with your Wife: Also the Heart of a Male Quale carried by the Man, and the Heart of the Female by the Woman, will cause that no Quarrel arise betwixt them. *Wicker's Secrets.*

To procure Love. Put a Ring into a Swallows or Sparrows Nest some time, which we use afterwards to procure Love. *Cor. Agrippa.* And its said that all Men will Love thee if thou carry a Swallows Heart; and that a Woman will Love exceedingly they that give her a Pigeons Heart powdered in Meat or Drink. *Wicker's Secrets.*

Whether a Woman be Chast. Lay a Load-stone under her Head when she sleeps, and if she is Chast, she will embrace her Husband. *Wicker from Albert.*

That Women may have Handsom Children, Let them at the time of Conception have some handsom Picture of their Ancestors or others, set before them. Its said that a Woman hearing this, had a Handsom Boy Carved in Marble, and after thinking of it, the Child was like it and as White, *Wicker's Secrets.*

To get Boys or Girls the best way. I imagin this to have the Parties think at the time on which sorts they would have, and Living in Love and Unity together, and in the fear of God, with submission to his Will, and be content;

Content is all we aim at with our Store,

If that be had with lit t, what needs more?

To make Fire with Rain. Take Oyl of Peter, Quick-Brimstone, yellow Brimstone, fresh Quick-Lime, Creek-Pitch, Ship-Pitch, mingle these, and this mixture will take Fire in any moisture. *Falpius.*

How to Walk on the Water, or safely go over a River Take a thick Leather Gut and blow it up well, and tye both ends, bind it under your Arm Pits; also take Drums of Leather and put under your Feet, and with a Staff with a Leather Drum at the end of it, you may to Admiration Walk on the Water. *Wicker from Cardan.*

To take a Fox by a Drag Hook. Take a large Salt-Water Fish Hook, Bait it with Flesh or Chicken, and tye it by a Line on a Strong Bough, cover the Hook with a Bait or

he'll discover the Deceit, let it hang so high that he may leap to catch it, let the Hook be strengthened with Wire five Inches above it, lest he bite it asunder.

To take a Heron. Take a Dace, Roach or Gudgeon, run a small Wyer along within the Skin on the back-side the Ribs, then it coming out at the Gills, fasten a Hook to it, and stake it down; and let the Wyer be fastned to a Line as far as the Heron can wade, the Fish will Swim and live some time, then leave it, when the Heron comes he swallows it and is catch'd; thus you may take in deeper places, Coots, Cormorants, Sea-Pyes and Osprey.

To take young Hawks, Crows, Pyes, Rooks, &c. You, must look for Hawks in high Woods, and the loftiest Oaks but the best way to take them, is when they have just left their Nests, yet, upon occasion, return to it again, as not daring to trust too much to the Wing; their Haunts are observable by their Mutings, then creep under the Trees, and mind the way they come in and go out from the Nest, next watch the Old Hawk going for their Provision, and in her absence, climb up softly, and having a Net or more of green Thread, which is least perceivable, place betwixt the Arms of the Trees they commonly pass through, with drawing Strings fastned to some of the Branches, so that when they, unaware, enter into the Cod and flutter, then pushing forward, you may draw the Strings and take them; and thus of the rest above mention'd.

To keep Hens from Foxes safe. Its said, That a Fox boil'd and cut in pieces, and given Hens for Meat, he'll not come near them in two Months. The same holds for Ducks, Geese. *Cardan.*

A Cock will not tread a Hen if you anoint his Fundament with Oil. *Paxamus.*

To blow out a Candle and light it again, seemingly holding the Flame in your Hand. Fold your Fingers one within another, and slick betwixt them a Paper like a small Card Match, then draw your Hand over the Candle, as if you were going to grasp the Flame in your Hands, when the Paper is lighted blow out the Candle, and put your Hand back again quickly, and the lighted bit of Paper in your Hand will light the Candle. I have seen it done to the astonishment of By-standers.

To

To make two Knives, with a short Stick, hang on the brim of a Glass without falling. Take a small Stick about four Inches long, and make it sharp at one end like a Scur, get two Knives about the same poize, and prick the Points of them toward the bigger end of the Stick, Hopewise on each side, put then the small end of the Stick upon the Brim of the Glass of any Liquor, and you may take the Glass and drink and they'll not fall off.

To make a Pewter-Dish Freeze on a Joint-Stool by the Fire. Take a Joint-Stool and set it by the Fire, then put a little Water on the middle of the Joint-Stool, and spread it as broad as the Pewter-Dish; then set the Pewter-Dish on it, and fill it almost full with Snow and a handful of Salt, then stir it with your Hand, and use some hard Words, and tho' the Snow melts in the Dish, the Dish will be so hard Frozen to the Stool that you may carry it any where.

Dogs will piss against any body if you rub any ones Cloaths with the Skin of a Red Herring: Also if you rub an Ale-House Pot with the Skin, the Tapster cannot make the Pot froth nor bear a Head.

To have Three Capons at the Fire, one shall be Roasted, one Boiled, and one Raw. You must have one to pour cold Water continually on that that is to be raw, and boiled Water on that that is to be boild, and the Fire will roast the other.

A Cock will make sport by fighting with a Looking-glass held in the Hand, throwing some Meat now and then.

To seem to cut ones Nose half off. Let your Knife have a Gap in the middle, and unperceivedly clap it to your Nose, and it will seem to be half cut off.

To light a Candle at a Picture's Mouth. Put a little Speck of Brimstone there, then blow out the Candle, and the Red Snuff will light if held to it; be sure there be a good Red Snuff.

To make a piece of Paper or other such thing move upon a Table. Put a Beetle under it, and it will move to admiration.

A Strop to set a Razor on. Take a little Brick-dust, and alike quantity of Emroy, both very fine sifted and ming-

led together, then take a Strop of Leather, and Oil it pretty well with Linseed Oil, then smear it over with the Composition thin, just to crust it, and rub it in well with a Smoothing-Iron, and when dry, rub your Razor on it; Brick-dust and Linseed Oil, or Flanders-Tile and Linseed Oil will do well, used as before. Let the Strop be good Calves Leather uncolour'd.

To whiten your Teeth. Rub them with a little Brick-dust on a Linnen Rag, and wash your Mouth with clean Water after.

To Brew Beer or Ale. March and October is the best time, any Water that will Wash is good, Pond Water, if clear, makes the strongest, tho' Rain Water I prefer before it for wholesomeness and for present use; River Water ought to be taken up in dry Weather, tho' some say that in wet Weather, and when as thick as Porridge, it makes the strongest Liquor; but People must u'e the best they can get, which is that that is clearest and softest; they must also get the best Malt they can. *Derby, Nottingham, and Cheshire* is reckoned best for Ale, tho' there is good and bad in all other Countries. Let your Malt be but just crusht in grinding, for, if small ground, it clods, and will not be fine, nor yield its strength. Let not your Malt be above a day ground before you use it, nor mix it, tho' some say its best five Days ground before, and that mixed Malt is best, but by its standing long, it loses its Balsamick quality; eight Bushels will make a Hoghead of strong, and another of small Beer, and two Meshes is sufficient, tho' some use three; half a Pound of Hops is sufficient for a Hoghead of Ale, but a Pound and a quarter to strong-Beer, and more if you keep it some Years; use also the best Hops that's well scented and cured; the Hops that you put first in will serve the second Mesh pretty well, but fresh Hops in the same quantity as at first is better. Your Ingredients being prepared put the Liquor into the Copper, strew a handful or two of Meal into the Copper and it will heat sooner; when the Liquor begins to simmer, take it out, and let it not boil and be sure you mix not the Malt with boiling hot Liquor, for it will then Clod and not yield its strength; let the Liquor rest

rest in the Mesh-fat till the Steam is over, and you can see your Face in it, then put in your Malt and it will keep longer hot, and sink by degrees, or if not, press it down with your Hand by degrees; when it settles, put into your Mesh-fat as much more hot Water out of the Copper as will make one Hoghead, and stir it two Hours together; in the next place pull out the Spigot and let it run off clear. The rest that is to be done, I leave to the care of the Brewer, and also offer him divers other Methods which he may make use of, and stick to that that is best.

Another Receipt.

Another way. In Brewing, the Water ought to be pure and clear, and rather River-water than that of Wells or Fountains, being richer and fatter; that the Malt and Hops ought to be good, and are to be put in the Mesh-fat together, and the whole quantity of Water, whether put in at once or twice, is to be put in just scalding hot upon them, and being stirr'd well together to stand a due time, till the Water can extract the virtue out of the Malt and Hops, and then the Wort is to be drawn off. He says, That if cold Water would extract the virtue of the Malt and Hops, the Ale and Beer would be much better, but further says it will not do it; and *Thomas Tryon* says, That if you make but your Water next to boiling, but not to boil, he has try'd, that it will extract the Virtue out of the Malt and Hop, and make both much more and much better to keep than that that is boiled. *Sally.* The Doctor says, That the Wort ought not to be boil'd after it is made, for that the boiling of the Wort diminishes the Spirit; he says further, That a *York-shire* Lady, that brew'd the best of that Country, told him she never boil'd her Worts, and that her Ale, tho' fourteen Months Old, tasted as New as if it had been but three Months Old or less; she said, this Ale would keep fourteen Months longer, which she imputed to the quantity and goodness of the Malt; for, she said, put but in half the Malt, and it will not keep a quarter so long.

The working the quantity of the Yeast, he says, ought to be in proportion to the quantity of the Liqueur, and it ought

ought not to be wrought up too hot, but as cool as possibly to be done, and then the Fermentation will be natural, and will keep long, and the Fermentation will cease when the Liquor comes to a fineness. The time of Working being over, keep your Vessels cool; the time of keeping is according as it is in strength with Malt and Hops tinctured. It ought to be kept in a quiet Place, out of the noise of Carts, Coaches, Guns, Thunder and Lightning, all which causes it to Fret and Sour as well as the heat of the Air. In short it ought to be kept cool and quiet. Ale new, mild and fine, purifies the Blood, and Nourishes, is Diuretick because of the Hops, and frees the Reins, Ureters and Bladder, from Stones, Sand and Gravel; its good in Consumptions, makes lean People fat. Beer is good against the Scurvy, Dropsie, Stone and Gout.

Mr. Tho. Tryons Method of Brewing Ale, Beer, &c. Make your water near boiling hot, but not boil, then put just so much into your Mesh Tub as will wet your Malt, stir it and let it stand half an Hour, then add the whole quantity of Water to your Malt, that you purpose to put in the first time, then let it stand an Hour and a half, but if you would have your first Wort very Strong, then two Hours, if the Season be not very hot; then put what quantity of Hops you think convenient into your Receiver, and let your Wort run to them, and when your Hops have infused an Hour and a half in the Wort, then strain it off in your Coolers, and you have done with your first Wort. Then put upon your Malt the second Liquor about the same heat as the first, and let that stand on the Malt but one Hour at most; take then what quantity you please of fresh Hops, and put in the Receiver as before, and let the second Wort run to them, take then both second Wort and Hops together, and put into your Copper, and then let them infuse till the Wort is near Boiling, but not to Boil; then strain this also into your Coolers, and then you have done with this also. Now says he if you would enlarge your quantity, (which is not proper) put what quantity you think convenient of Cold water, and let it stand half an Hour, and then run it off to some fresh Hops, then put the third Wort and also Hops into the Copper, as you did the second and first,

first, and let the Hops infuse till near Boiling, then strain it off into your Coolers and its done ; observe that you Boil not your Water. He says the best Small Beer is to be made by adding a large Proportion of Liquor to the Malt (according as you would have it) and then mix the first and second Wort equally together. He says that the quantity of Hops for Beer, if you would keep it a Year, ought to be 6 or 7 Pound to Eight Bushels of Malt, and that all Beers and Ale are best New. He says that you ought to take an especial Care that all your Vessels are well Cleansed with cold Water, which is better then hot, and that you ought to infuse in the Water some bitter Herbs or Seed twenty four Hours, as Wormwood dried, and after they are well Cleansed with bitter Water, expose them to the open Air. Let your Wort stand very thin in Coolers, and let it be quite cold ere you put it to Work, for if its too hot it will ferment too violently. He says you ought not when your Beer or Ale is in the Tun, to beat the Yest or Bawm into it, as the Custom is, which is very pernicious : He tells you that instead of Hops, Penny-Royal, Bawm, Mint, Tanfie, Wormwood, Broom, Centaury, Carduus, Eye bright, Betony, Sage, Dandelion and Hay; and divers others, according to their Natures and Quality, and for those Diseases to which they are respectively appropriated, used when dry and in their proper Season, that the bitter Herbs ought not to be infused above half an Hour; that Running or River Water is better than Spring, Well, or Pond-Water, and that New Ground Malt is best. Read his Art of Brewing and making Malt, wherein he gives you his Reasons for what he asserts. Sold by *George Conyers* at the Ring in Little-Brittain. Price 1 s. the Third Edition.

Another Method of Brewing Ale and Beer. An Ingenious Author says, That we may Brew as good Liquor at London as either *Tork* or *Nottingham* affords, and that our *Derby* Malt, Water and Hops, is as good as theirs, and that the difference lies only in the Brewing and well Ordering it. 1. He advises to put to one Quarter of Malt 75 Gallons of Liquor, or River-water, letting it Boil for one Hour, and so proportionably for a greater or lesser quantity, and to every Quarter of Malt half a Pound of Hops; your Malt being ready

ready

ready in the Mesh-tub, pour so much Water on it as will wet it quite thro', insomuch that the Mesh may be rais'd in the Tun a considerable height; then cover it up with Cloth very close 2 Hours, preserving the remaining part of the Liquor very hot in the Copper, if not Boiling. Next the two Hours being expired, work your Mesh with proper Instruments very well, till you can discern no dry Malt in the Mesh; this done let your Mesh Tun run gently into a convenient Vessel, and when you have let it run about half an Hour, according to the largeness of the Mesh, put on the remaining part with a Pail, throwing it all over the Mesh by degrees. 3^{dly}. Your Worts being all gathered and emptied from the Vessel wherein you have gathered it, into the Copper, and the Hops put therein, boil it 3 hours at least, then empty your Copper into the back Cooler. 4^{thly}. While your Worts are Milk-warm, clear it in your guile Tun, while it runs clear from dregs; you may put your dregs into a Flannel Bag, and drain a quantity off clear, and of the Strongest Liquor from them. 5^{bly}. To your Worts 54 Gallons from a quarter of Malt, put two Quarts of good Yeast, and let it work 24 Hours, beating it in 3 or 4 times day, according to the Season; Winter requiring great Care. The Guile being well wrought, Tun it up into well Seasoned Vessels, leaving liberty for it to Work for about half a Day, then bung it up close. Let your Cask stand undisturbed 6 or 10 Weeks, and it will be Fine and Strong. He says that if by accident it does not Work, a Remedy is. Take the Whites of two Eggs, and half a quartern of Brandy, beat them well together, and pour them into the Guile; if the Drink is in the Cask, pour it into the Bung, and lay a warm Cloth over it, and in an Hours time it will work briskly. Remember you under-lay your Cloth that you cover your Vessel with, that it may have room to begin to work, then take off the Cloth. Another way, Take a quarter of an Ounce of Zinziber Powder, two Ounces of fine Loaf Sugar, mix them well with some of the Liquor being warm, and pour it in.

A way to clear Ale or Beer, tho' never so thick. Take a Pint of Water, half an Ounce of unslacked Lime, mix them well together, let it stand 3 Hours, and the Lime will settle

tle to the bottom, and the water as clear as Glass, pour the Water from the sediment, and put into your Ale or Beer, with half an Ounce of Iling-glass well boiled, and in five Hours time or less, the Drink will settle and clear. This quantity will serve a Hoghead.

The Scotch way of Brewing strong Ale. They first boil the Water and scum it till its clear.

2. They put the Water to the Malt, allowing 8 Gallons of Water to every Bushel of Malt.

3. They stir it well for an Hour.

4. They cover it close with Cloths, and let it stand for two Hours.

5. They let the Wort run from the Malt.

6. When the Wort is all run out, they Boil it two Hours together, and take off the scum very clean.

7. They put it into Coolers, and when its well cooled it will rope like Oyl.

8. Then they put it into a Tub, and put their Yeast to it, but if they want Yeast they take a Green Birchen Rod and wreath it, and so put it into the Wort, and it will make it work as well as Yeast.

9. Then they let it Work very well before they Tunn it, afterward when it hath done Working in the Vessel, they stop it close with Salt and Clay, and so order it that it will last 7 Years; but because that with long standing it doth waste, they fill it up with New Ale in the heat of Summer, which both make it work and quickens it.

Of Wines, and how to Make Cyder equal to Canary. Our Wines being so adulterated, balderdash't and Brew'd; Its the Opinion of Dr. Gibson that they are now become prejudicial to Peoples Health. Canary has been reckoned, and is so, if not abused, a great Cordial, nourishes much and restores Consumptive People; cheers the Heart, revives the Spirits. Alicant is a good Stomach Wine, causes a good Appetite, and stops Fluxes, and is good against Pitsick and spitting of Blood. Sherry is a good Stomach Wine, strengthens a cold, moist and weak Stomach, but not proper in Fevers, nor for hot Constitutions. Port O Port is a good Stomach Wine; Rhenish is a good Nephritick, and much Diuretick, good against Gravel and Stone, strength-
ens

ens the Stomach, causes a good Appetite and Digestion. Florence, White and Red are good Stomach Wines, the Red is binding. French White-wine is Diuretick, and the French Claret is Styptick and binding, and breeds Stone and Gravel. But the Doctors being of Opinion that they are abused, I advise to *English* Liquors. As first

Cyder, of which Red Streak is best, is a good Stomach Liquor, purifies the Blood, is Diuretick, and roots out the Scurvy. To make Cyder as good as Canary, you must make Sweets thus. Take 112 Pound of Sugar, Water 8 or 10 Gallons, in which 30 or 40 Eggs are well beaten and dissolved; put your Sugar into your Kettle or Vessel on a gentle Fire, and put to it 4 Gallons of the Egg-water, stir all about till the Sugar is dissolved, when it boils put in more Egg-water, to keep it from boiling too high; and thus continue putting one Quart of another for about an Hour, till your Egg-water is spent. But if you prepare your Egg-water in Parcells, to wit 4 Pints at a time, its the best way, so will the Eggs carry away all the foulness of the Sugar, making it rise in a Scum, and then take it clear; thus having done, boil it to the consistency of a Syrup, which will be clear and pure and cold, is to be put into your Cyder with a little Coriander Seed bruised and tied in a Rag, and this Syrup I call Sweet. Observe that you may make them of Brown or White Sugar, the White makes your Cyder a pale Colour, and the Brown of an Amber Colour; and the latter may do as well, and this will not stand in 6d a Quart; put in of this Sweet 2 or 3 Gallons, more or less as you please, but let your Cyder be rackd the last time, and past the fermentation before you put it in; thus mix your Sweets and the Spirits you intend to put in together, with a little quantity of Cyder, stir them well together, and put all into the Hogshead of Cyder, stirring them all together 7 or 8 Minutes with all your Strength, with a strong St. ff at the bung-hole, then stop it close, and draw none off till 3, 4 or 5 Months, and then its fit to Drink. In making it resemble Canary, you must use more Sweets and Spirits; if you put in the Spirits before Fermentation, they will evaporate and be lost. That your Cyder thus mixt with Sweets and Spirits, may ever drink

drink well, it must first be put up into wooden Casks, and then kept its due time to incorporate as aforesaid; you may first make tryal of a Vessel of 7 Gallons, putting in 3 Quarts of Spirits, and two Quarts of Sweets; and after 12 Weeks it will be as Strong and Pleasant as Canary, and then you may bottle it up. This Liquor will keep in a Cask three Years, if you keep the Cask full, but observe that in eight Weeks time, the Liquor will waste about two Pints, which be sure fill up again with Liquor of the same Strength, or Stronger; and thus it will grow better, and better. If you chance to keep it too long, and it becomes unpleasant as old Hock, then take one Hoghead of your stale Cyder, and one of Tart New Cyder, before it is quite fine, and mixing them well together, Tunn them up in two other Hogheads, adding the proportion of Spirits and Sweets to the quantity of New Cyder, and then it will be as good as ever it was, and speedily fit to drink. Wormwood Cyder. To make this, you do by adding Wormwood to Cyder-Royal, as you do to Wines; and this is Excellent to procure Appetite, and cause Digestion.

If you would make Cyder-Royal as Strong as *French Wine*, Take a Hoghead of Cyder, and add some part of another Hoghead to it, and distil off the Spirit; this Spirit rectifie a second time, and then put into the remaining part of the Hoghead of Cyder, fill up the Hoghead with other fresh Cyder; stir it about well, and keep it close stopt, except one Day in 9, 10, or 20, you let it lie open 5 Hours, and thus in 3 Months its fit to drink, and will be as strong as French Wine. To make it as strong as Canary, add half as much more of the Spirit to an Hoghead as you did the former, and two or three Gallons of Sweets more or less, to please the Palate, and it will be as Strong as Canary. Experience is gain'd by making many Tryals. 1. That Cyder of the Strength of *French Wine*, requires to every Hoghead of Cyder 4 Gallons of Spirits, or Cyder Brandy, which is not a Pint of Spirits to 4 Quarts of Cyder. 2. The second Cyder of the Strength of Canary, requires of Spirits 6 Gallons, or Cyder Brandy, to every Hoghead, that makes about a Pint and

a half of Spirits to a Gallon of Cyder, and about three quarters of a Pint of Sweets to the like quantity.

The Spirit of Cyder is extracted by Distillation, in a Copper Vesica, Tinn'd within, with its Worm, from Cyder in all respects, as they make *S. V.* And observe if the Cyder is prick't or acid, its better for Spirits, and yields a larger Quantity than that of the best Cyder. *Salmon.*

I am apt to think, that if you put two Spoonfuls of this Sweet, made as aforesaid; and one Spoonful of Spirit of Clary, and a spoonful of Spirit of Cyder into a Pottle, it will be very Rich in a Months time, and will not stand in above 6d or 7d a Bottle. Try Experiments, by putting more or less, till you please your Palate. I conceive with Syrup of Clovegillyflowers or Spirit of it, or any wholesome Spirit or Syrup, you may make what tasted Wine you please. By this Method, Perry, Cherries, Currans, Gooseberry Wine, may be made to resemble Canary, and as good and wholesome. Doctor *Hartman* says he has observed that Brandy, Spirit of Wine one Grain, and other Spirits, if they are Fine may do; and that he has experienced, that the Spirit of Molosses, Raisons, and the Lees of Wine, with other Fruits if rectifi'd and drawn fine, are as good; and that a rectified Spirit of Malt will serve where Spirit of Cyder is not to be had. He says that the first he compleated was thus, He put 6 Gallons into a Vessel, two Quarts of Syrups or Sweets, and 3 Quarts of the Spirit of Cyder, which after two or three Months he found to be as Strong and Pleasing as Canary. He says further, that 28 Pound of Sugar will make 4 Gallons of Sweets, and so proportionably, and the Whites of 8 or 10 Eggs well stirr'd and put in as before directed.

To make Mead. Take four Pound of Honey, three Gallons of Water, you may put two or four, as you would have it in Strength; mix or dissolve them, and then let them boil gently, and clarify with 9 or 12 Whites of Eggs, taking off the Scum, being only Blood-warm; then add a Pint of Ale-Yeast, or a small Leaven dissolved in a Pint of the Liquor, and let them work, then Tunn it into a Vessel, and being well settled, Bottle it up.

Note, 1. That the Liquor ought to be so strong of Honey

ney that it may bear an Egg, and break and boil the shells with the Whites of your Eggs; for present spending you may put the Juice of two Limons to a Gallon, and you may if you please add Cloves, Cinamon, Nutmeg, Limon-peel, Ginger, to make it taste according to the Palate, or you may let it alone. Some put Marjoram, Mint, Tyme, Bawm, or what other Sweet Herbs they like; let it stand 12 days before you Bottle it, and it will be fine. In a Months Bottling its fit to drink: if you work it it with yeast, have a great care to draw it into Bottles; presently after the Working is over, as in 14 or 18 Days; for Working it with Yeast, makes it soon grow stale, sour and dead, before you are aware; but if you singly work it of it self, and by the Suns help, or a gentle Sand-heat, or B. M. without adding Yeast or Leaven, it will keep 12 Months, if fill'd to the top, and stop'd close; if you put Spirit of Clovegillyflowers into it, it makes it a curious Red Colour.

To make Metheglin. Take four Pound of Honey, Water 15, 18 or 20 Pound more or less, as you would have it in Strength, dissolve and mix, then put Mint, Sage, Rosemary, Bawm, Tyme, Bay-leaves, Angelica, Savory, Roman Wormwood, *Geranium Moscatum Origanum*, Smal-lage, of each a handful; Ginger, Cinamon, Nutmegs, Mace, Cloves, all in gross Powder, and ty'd up in a Bag, of each two Ounces, boil it an Hour, and clarify with the Shells and Whites of Eggs only, taking off the Scum, then strain it through a Cloth into Wood Vessels, and being Blood-warm or cool, Tunn it up. *Note*, 1. Some People will put to every Gallon of Liquor a Pound of Black Currans well bruis'd. 2. Keep your Vessel always near full. 3. Cover the Bung hole with a Plate of Lead lying loose on, that the Working of the Liquor may lift it up as need requires. 4. That as it works over, you still fill it up, but not to the Brim, with fresh Liquor of the same sort. 5. That having done working in a Months time, stop the Bung close. You need not work it with Yeast nor Leaven, for it will Work of it self. Some hang the Spices in it in a Bag, not Boiling them with it at all. For present Drinking, Take the Whites of three Eggs, three Spoonfulls of Wheat-Flower, beat them together,

and mingle well with your Liquor, and it will presently Work, when done, stop it close with Clay tempered with Salt. 6. If for long keeping, put in a Pound of Hops to every Barrel ; in 24 Weeks draw off the clear into another Barrel, or Bottle it. This will keep many Years. this Opens Obstructions, and Cures Consumptions. *Salmon.*

A way to make Mead.

Take Clarified Honey one Part, and eight parts of Pure Water, and Boil them well in a Copper Vessel till half is boiled away, while it boils, take off the Scum clean, when its done boiling and begins to cool, Tunn it up, and it will Work of it self ; as soon as its done working stop the Vessel close, and bury it under Ground for three Months, and it will taste like Wine.

Another. Take 20 Pound of clarified Honey, and 32 Gallons of Water, mix them well together, and boil the Liquor half away, and take the Scum off clean. To make it Smell and Taste Pleasantly, put Flowers of Elder, Marjoram and Rosemary of each a handful, Cloves six Ounces, Cinamon two Ounces, Ginger, Pepper and Cardamum, of each two Scruples ; this will give it a Pleasant Taste.

Another. To a dozen Gallons of Honey and Water mixed as before, or as you please, to make it Strong or Small. Take Ginger one Ounce, Cinamon half an Ounce, Pepper and Cloves two Drams, all gross beaten ; the one half sow in a Bag, the other loose, and so let it boil a Quarter of an Hour. You may mix your Honey and Water till it bears an Egg, by which Rule you may make it Stronger or Weaker.

Another. To Sixteen Gallons of Honey and Water as before proportion'd. Take Tyme one Ounce, Rosemary, Marjoram and Eglantine, of each half an Ounce, two Ounces of Ginger, one Ounce of Cinamon, Cloves and Pepper half an Ounce of each all gross beaten, one half boil'd in a Bag, the other loose. *Note,* that Green Herbs makes Metheglin flat, and Cloves high coloured ; and that scumming in the boiling is injurious, the Scum being in the nature of Yeast, and helps to ferment.

of

Of Apples.

One Mr. *Allwel* a Parson and Doctor for all Diseases, did chiefly prescribe Milk, and often Milk and Apples, by which he did many strange Cures. Indeed Apples are both Meat and Drink, and in *Kent* they have improved Ground by Planting them from 6 s. an Acre, to 3, 4, 5 and 6 l. Planting them in Hedge-Rows, or by the Hedges, about 20 or 30 Yards distant one from another; and one sort or other will prosper in any Ground.

Of Pears.

They are next to Apples in goodness; the Tree will grow in Stony hungry, gravelly Land, nay, in a tough hungry Clay, the Root of a Pear Tree being more able to pierce a strong and stiff Ground. I have heard of a Pear-Tree that has afforded 7 Hogsheads of Perry; they are as Advantageous as Apples, bearing much more than Apples because of their height.

The Virtues of Apples and Pears.

They are so great that an Author says, they will Beggar a Physitian to Live where Cyder and Perry are of general use. They keep the Body open, and somewhat loose, the sweetest loosen most, but they are not so good as Pleasant tasted Fruit. They help concoction taken after Meat, and eaten with Bread strengthen the Stomach; they are profitable in hot Diseases says *Galen*, being a Cordial to Persons; Roasted and eat with Rose-water and Sugar are good against Melancholly and Phrensie, if eaten with the Juice of Liquorice and Sugar Morning and Evening two Hours before Meat. *Gerard* says, that the pulp of roasted Apples 4 or 5, (if Pome-waters) mixt in a Quart of fair water and stir'd well together, and drunk last at Night, in an Hour cures those that Piss by drops with great Grief and Pain, the Strangury and such Diseases in twice taking it never fails, also it cures Running of the

Reins often proved. Pears have the like property of Apples.

To make Punch. Take two Quarts of Water, one Pint of Lime Juice, three quarters of a Pound of fine Sugar, mix and dissolve the Sugar; then put three Pints of choice Brandy, stir them well together, and grate in a Nutmeg. This Liquor cheers the Heart, and revives the Spirits beyond any other Liquor, Moderately drunk it helps Digestion, restores lost Appetite, and makes the Body profoundly Healthful, and able to resist the assaults of all Diseases. *Salmon.*

Experimental Curiosities.

Land not worth 2 s. an Acre, made worth 5 l. in few Years. Mr. *Blith* says, that Boggy Lands if you Plant Willow, Fallow, and such like, and drain it deep it will be worth near 5 Pound an Acre, and that in 7 or 8 Years, and that Wood on good Land may be worth 60 Pound an Acre in 11 or 12 Years.

An 100 Ashes Sold for 500 l.

A Gentleman Planted 100 Ashes, and Lived to see them Sold for 500 Pound at 50 Years growth. *Blith Husb.* page 163.

If you cover Cherry, Plums or other Fruit Trees, with a rough Canvas, or other Cloth in Summer, and wetting of the Cloth often, it will keep the Fruit back a long time, that you may have it when others are gone.

If you put a Branch of a Cherry Vine, Apricock, &c. in at a Window, and nail'd to the Sealing of the House, Fruit will grow within Doors.

A hot Bed of Horse-dung laid a Foot high, and supported on the sides, and Mould laid thereon 3 Fingers deep. If you Sow Cucumber-Seed, Turnip-Seed, Wheat or Pease, it will come up half an Inch above Ground in two Days; this is a Notable Experiment. Try also Cherries, Strawberries and other Fruit, that are dear when they are early.

Strawberries water'd once in three days with Water wherein

wherein hath been Steeped Sheeps-dung, or Pigeons-dung will come early. A good and profitable Experiment.

Fruit Trees on a South, or South-East Wall will bring forth Fruit early, and on a North Wall backward.

If you would have great Plenty of Fruit, Graft not only on your young Stocks, but on divers Boughs of an Old Tree. To Graft the Boughs of an Old Tree that is a bad Bearer with Grafts of some good Bearing Kinds, will have large Branches, and bear Fruit in a Year or two.

Trees will grow greater, and bear better Fruit, if you put Salt or Lees of Wine, or Blood to the Root, if Seasonably and Moderately used; especially to Old Trees, applied in the beginning of Winter.

To have several Fruits on one Tree. This is done by Grafting several Fruits on one Tree, provided they be of the same kind, as several sorts of Apples, so of Pears and Cherries, among themselves.

To have Fruits of divers Shapes and Figures. This is easily done by Moulding them when the Fruit is Young, with Moulds of Earth or Wood, of several Shapes in the inner side, as it is in Mould Work of Liquid Things; let the Moulds be made partable in the middle, that they may be opened.

To make Trees or Fruits with Inscriptions and Engravings on them, Is by Writing with a Needle or Bodkin or Knife, scoring through the Bark, when the Tree and Fruits are Young; and as they grow greater, the Figures or Letters will be plainer. I have mark'd the Name of the Fruit on the Tree, and it has appear'd two Year after plain.

To make Trees bring forth Herbs or Flowers round them. Bore holes in the Bodies of them, and put in good Mould, take care to put them in sloping downwards, that the Mould and Moisture may keep in about the Roots of things that are set: then set Slips and Sow Seed therein.

Trees set on the Backs of Chimneys Ripen Fruit soon. Vines that are drawn in at the Kitchen Window will ripen above a Month before others, only take care that they are not too near the Fire-side, least it dry the Branch.

Juniper Cyder, or Wine to make. Put 10 or 12 Berries dry'd in a Bottle, or a proportionable quantity to a Hoghead.

Hoghead, Ginger may be used with good Success, and it makes it brisk; Dry'd Rosemary put into it makes it Pleasant; Wormwood put into Cyder tastes as Wormwood Wine; Juice of Rasberries, as good as Rasberry Wine; Eldder-berries Juice the same. Clovegillyflowers dry'd and steep'd in Cyder, gives a rare Tincture and Flavour, and thus you may make Wine of Cyder of any dry'd Flowers, Leaves and Roots whatever. *Query*, whether the Chymical Oyl of Mace, Cloves, Nutmeg, &c. will not do the same, put in with some Sweets, as before is directed?

Consumption. Take three Ounces of Sugar Candy and put into three Quarts of Milk, and put it into the Oven with your Bread, and sup Morning and Evening about half a Pint warm, I am told it cured one given over by Doctors.

For the Tooth-ach. Take a head of Garlick and pull the Skin off, bruise it and lay to the Sole of your Feet, tie it fast on, and it speedily cures, by drawing the humour out.

Corns, Take a little Salt and some few Marigold Leaves and beat them well together, and then lay a Plaster of it on them, and in a little time it will Cure for ever. *Proved.*

Rats and Mice to Kill. Take a Board of 2 or 3 Feet Square, and lay a piece of rusty or fry'd Bacon in the middle, then daub the Board pretty thick with Bird-Lime, round the Bait, leaving some little Alleys for them to come up to it, and they will strike, and cry and draw. You may catch 12 at a time.

To prevent Thieves breaking into your House. On the East-side of your House hide the Gall of a Cow, and you will see the strange Effects of it.

To make an Apple, or any other Fruit grow in a Vial. Put your Vial on it when Young, and it will grow so large that you cannot get it out again, and cause great Admiration.

To make a Dog follow you. Take a piece of Cheese and put under your Arm-Pit: This will as it were toast the Cheese, and cause such a smell, that he'll follow you where you please.

To set a Razor as well as a Hone. Take a Strop of Calves Leather as usual, any Shoemaker will give you one, or Sell it for a small matter, then take a little Linseed Oyl, and Oyl it over very well, then take a little of the finest and best Brick-dust, and as much Emory fine beat, both sifted. Cutlers will give or sell you a little of both. Then lay it on the Oyled Leather thin, and with a smoothing Iron or Sleek-stone make it smooth, when dry use it to sett your Razor on; a little *Flanders-Tyle* and Emory I believe will do as well; Brick-dust and Oyl laid on a Leather has done pretty well.

One *George Whitehead* made a Ship with all the Tackling to move its self on a Table, with Rowers plying the Oars, a Woman playing on a Lute, and a little Whelp crying *Scotus*.

Gafrel says, That a Clock was made, on which a Company of Shepperds play'd on Bag-Pipes, with rare Harmony and motion of Fingers, while others Danced by pairs and kept time, and others Danced and Leapt. *Junius* saw at *Mecklin* in *Brabant*, a Cherry-stone cut in Form of a Basket, wherein were fourteen Pair of Dice with thin Spots easie to be discerned.

To black the Beard. Dry'd and burnt Lead mixt with the Juice of Crude Beets, to the thickness of Honey laid on, and let alone till Dinner, then washt off.

An Ointment to Colour the Hair Red. Take of burnt Tartar poudred, Oyl of wild Cucumber, each a sufficient quantity, make a Lineament to anoint the Hair.

If you would have the Ground always moist about any Plant, place near it a Vessel of Water, and put therein a piece of woollen Cloth, or List, and out of the Vessel let one end thereof hang to the Ground, the other end in the Water in the form of a Crane. Let the Cloth or List be first wet, and then your Water will always drop, as long as the Vessel lasteth; then you may add more water. Let the end that hangs out of the Vessel be lower then the water in the Vessel, or it will not do. If it drops not fast enough encrease the Cloth or List, and if too fast, decrease it.

To make hands White. Take a Pint of Water in an Earthen

Earthen Vessel Leaded, and well covered, and boil half away; then add Juice of Limons six Ounces, Honey, Oyl of bitter Almonds, each two Ounces; mix them, and make an Unguent.

To Whiten the Face. Take the Crum of White-Bread, steeped in a sufficient quantity of Goat or Asses Milk, and distill it.

To Whiten Scars. Take of Brimstone and Salt of each half an Ounce, Camphir, Tutty, of each one Dram, Rose-water two Ounces and a half, powder them and mix them.

Water to Whiten the Teeth. Take of red Alum 6 Ounces, Salt three Ounces, Mastick one Ounce, Myrrh half an Ounce, Cloves 6 Drams; mix and distil them, with which rub the Teeth.

Take a Pint of Spring-water, dissolve a piece of Roch Alum as big as a Nutmeg, and put a little Salt into it, with a little Vinegar, and wash your Mouth. A little Powder of Brick-dust on a wet Cloth will whiten the Teeth and wash your Mouth with this, or clear water after it.

To make Hair Black. Take of the Filings of Iron as much as is sufficient, put it into the sharpest Vinegar ten days, then wet the Hair with it; or take of Caper Roots as much as is sufficient, boil them in Asses Milk till a third be wasted; wash the Hair, and let it alone all Night.

To make the Hair White. Take of the Greater Centaury four Ounces, the Lees of Alum eight Ounces, Roch-Alum, Gum-Arabick, each two Ounces, clean white Soap, Gum-Tragacanth, each four Ounces, water six Ounces; boil them to one half, and strain it, and the Head being washed with it and dried by the Sun. Last of all wash it with Lye.

An Ointment to Dye the Hair White. Take of Swallows Dung and the Gall of a Bull each a sufficient quantity, mix them, and make an Ointment. Or take of Elecampane, the rind of Radish Roots, Alum, Glew, of each one part, mix them and Anoint.

An Ointment to Curl the Hair. Take some Rams-Horn, cut it, and powder it with Oil, and anoint the Hair. Or take Pine-Kernels burnt and powdered, Oyl of Myrtles, of each a sufficient quantity, mix them, and make an Ointment.

To make the Hair Yellow. Raw Lupines laid on with Water and Nitre make the Hair Yellow.

Of Bathing.

Snow apply'd to the Nose, Hands or Feet, frozen with cold preserves them, but if you wash them with warm Water it perishes them; and on the contrary, washing your Hands and Feet when they burn, with warm Water cools them.

Water made warm, and some Herbs put in, of Bawm, Savory, Hyflo, Fennel, Marjoram, and other Sweet Herbs, is good to Bathe in; as also natural Baths of warm Water. Cold Water cools, and if by accident the Pores are shut, and the heat penn'd in, it heats.

Ointments to Beautifie the Face.

To make the Face Bright. Take three Ounces of Oyl of Tartar, one Ounce of Seeds of Fleawort, infuse them in the Mucilage, mix and dissolve them in an Ounce of Oyl of Roses, Borax, Sal Gem, each one Dram, and make a Liniment.

To make a Colouring for the Face. Take Citron Ointment four Ounces, Pomatum two Ounces, mix and anoint Night and Morning, then wash with Bean-Flour-Water.

An Ointment to Whiten the Hands. Take Oyl of Bitter Almonds, well washt in Rose or Violet Water, a sufficient quantity, white Wax enough, mix them by the Fire, and make an Unguent.

Another. Take Oyl of Sweet Almonds well washt, white Wax, each a sufficient quantity, Camphir one Dram, mix them, and make an Unguent.

To Whiten the Face. Take of Virgins Milk two Ounces, Oyl of Tartar one Ounce, mix them, and Anoint the Face at Night going to Sleep, in the Morning wash it, and it will be Clear, Bright and Fair.

Bad and Evil Days in every Month.

January the 1st, 2d, 4th, 5th, 10th, 15th, 16th, 17th, 19th and 25th, as *Ægyptian* and *Chaldean* Astrologers say, and some Astrologers say, that what Day of the Week *Innocents Day* falls on, that Day falls out cross all the Year. The *Jews* call *January* Shebat, its their 11th Month.

February

February the 4th, and *Erra Pater* says, the 17th and 18th. The *Jews* call it *Adar* their 12th Month.

March 1st, 15th, the *Egyptians* and *Jews* say, the 15th, 16th, 21st. The *Jews* call it *Abib* or *Nisan*; its their first Month, *Exod.* 1, 3. 11. *Est.* 3. 7.

April the 10th, 16th, 20th, 21st, the *Chaldeans* say, but the *Jews* say only the 15th and 21st. The *Jews* calls this Month *Ziv*, or the Month *Jiar*, *1 Kings* 6. 1. the second Month.

May the 3d, 7th, 15th, but the *Jews* say 1st, 7th, 15th, 20th, the third Month *Siran*, *Est.* 8. 9.

June the 4th, 7th, 10th, 16th, the *Jews* say that only the 4th and 7th are Evil; its their 4th Month called *Tamnuz*.

July the 13th, 20th, 22th, the *Jews* say the 15th and 20th are only Unfortunate; also from the 19th day of *July* to the 26th of *August* are call'd *Dog-days*. The *Jews* call it *Ab*, its their 5th Month.

August 19th, 20th, The *Jews* 6th Month, call'd *Elul*, *Nehemiah*, 6. 15.

September the 3d, 6th, 7th, *Erra Pater*, the *Jews* say only the 6th and 7th are cross. The *Jews* call it the 7th Month, *Ethanim*, and also *Tisra*, *1 Kings* 8. 2. *Lev.* 23. 34. New Wine being then, *Deut.* 16. 13.

November the 5th, 15th, 19th, others say only the 5th and 19th. The *Jews* call it *Kislev*, or the 9th Month, from *Kesel*, it bringeth Tempests, *Zac.* 7. 1.

December 2d, 6th, 7th, 9th, 22th, the *Jews* say only the 6th, 7th, 11th, others say, the 15th, 16th. The *Jews* call this Month *Tebeth* or *Tobath*, the 10th Month, *Esther* 16.

Climacterical Years, or Years generally attended with great Mutation of Fortune, the 7th Year of a Mans Age, the 21st, the 49th, 63d, and the 81st Year, the two last are call'd the Grand Climacterical Years, in which many Famous Men have been observ'd to die.

To Kill Mice or Rats. Take Wheat-Dough and mix it with Arsenick, and put it into their Holes or Places where they come, and it kills them. Take care you wash your Hands after the use of Arsenick, for its as rank Poyson as any

any in the World: also keep your Vessels of Liquor cover'd, least they going to Drink drop in, and are Drowned.

To Kill Mice. Take Oatmeal and powder'd Glas, and mix it with Butter, and lay it where they come.

Calicrates, a Stone-Cutter of *Sparta*, made Ants of Ivory, with all their Limbs, so small, that Eye could scarce discern them. *Mercemoides* made a Chariot of Ivory, with Horses and Charioteers so small, that a Fly could cover them with her Wings: He made also a Ship and all the Tackling so small, that a Bee could hide it. A Waggon and a Horse made of Glas, that might be hid under a Fly, *Cardan*.

Mark Scaliot of London, Blacksmith, made a Chain of Gold of 43 Links, and a Lock and Key fasten'd to it, and fastned it about a Fleas Neck, which she draw'd with ease; the Chain, Lock, Key and Flea, weigh'd but one Grain and a half. *John Stow* writes he saw it.

Rot in Sheep, to prevent and Cure. Mr. Worlidge says, that to prevent the Rot in Sheep, you must feed them on dry Lands, and keep them late in the Folds in the Forenoon, and feed them with Hay, mixing Salt with it, and other dry Meats; and that nothing is better to prevent and cure it than Parsley: also to feed them on Salt Marshes, and brackish grounds.

Canker'd Fruit Trees. He had one that grew on Land that was rich and light, and Canker'd; whereupon he caused the Earth to be taken away round it, about four Feet from the Stem, and about 5 or 6 Inches deep; and in the room thereof caused Stones to be set close and near together, in dirt taken out of the High-way, instead of Gravel after the manner that Streets are pav'd, and it Prosper'd, and did bear mightily the next Year, to the admiration of his Neighbours; and that he also did the same to other Trees, with a proportionable quantity of Chalk, and ram'd it fast about the Trees, and it had the like Effect as the Paving; tho' he thinks that it will not dure so long as Paving.

Mr. Childry says, that in the West-part of *Cornwall*, Winter-Swallows are found, sitting in Old deep Tinn
L Works,

Works, and Holes of the Sea-Clifts, p. 13. of his Natural History.

In the Year 1580, in Denge-Hundred in Essex Field, Mice did so swarm, that they eat up all the Roots of the Grass; and that a great Number of Owls came and devoured them all, and then Flew away.

Brumswick Mum to make. Take 63 Gallons of Water, and boil till the third part is consumed, then Brew it with 7 Bushels of Wheat-Malt, and one Bushel of Oat-meal, and one Bushel of ground Beans; Tunn it, but not too full at first: put 3 Pound of the inner rind of Fir, of the Tops of Birch, and Fir, of each 14 Ounces, and three handfuls of *Carduus Benedicens* dried, two handfuls of Flower of *Rosa Solis*; of Betony, Burnet, Marjoram, Penny-Royal Flowers, Elder, and with Thyme, of each one handfull and a half, and three Ounces of Seeds of Cardamom, Barberries bruised one Ounce. Put them into the Cask, your Liquor having wrought a while with the Herbs, let the Liquor Work over the Vessel as little as you can, fill it up at last, and stop it, and put in then some New laid-Eggs, the Shells not broke nor crackt. Stop all close, and Drink it 25 Months Old; some add, as I told you before in page 63, Horse-Radish rasp'd 6 handfuls, and a like quantity of Water-Cresses, Brooklime, and Wild Parsley. If Mum is carried by Water, it is the better.

A way to find what day of the Month every first Sabbath Day is, by two Verses, knowing the Dominical Letter.

*At Dover dwells George Brown Esquire,
Great Christopher Finch, and David Frier.*

Or thus,

*All do Dye, Good, Bad, End.
Get Christ first a Dear Friend.*

I would know what day of the Month the first Sabbath Day is in *October 1687*, Dominical Letter *B*.

I first count what Month in the Year it is, and find it the

the 10th, which is *And*, which begins with *A*, and is the Letter for the first Day of that 10th Month.

Count then all the Dominicals, as in order they lye, beginning with *A*, till you come to the Dominical Letter of the Year, which is *B*, viz. *a b c d e f g* and as many as it is to the Dominical Letter, so many Days in that Month is the first Sabbath Day, viz. the second of *October*.

Next, I would know what day of the Month, the first Sabbath Day is in *August* 1688, it being Leap Year, and the Dominical Letters *A G*.

Note, First that every Leap Year hath a double Dominical Letter, the first for *January*, and to *February* the 25th only; the second for the remaining part of the Year: all other Years there is but one single Letter.

In the Leap Year, therefore for these two Months, take the first Dominical; and for *February* by the Verses you find, that the first Letter ascrib'd to that Month, begins with *D*, so count through all the Dominical Letters, till you come successively to *4*, and that is the Day of the Month for the first Sunday in *February*, viz. *d e f g a* which is the fifth day.

Again, I would know what day of the Month the first Sabbath in *August* 1688, its a Leap Year, and the Dominical Letters *A G*.

I first count what Month it is in the Year, and find it the 8th, then I repeat the Verses, till I come to the 8th Word, which is *Christopher*, or *Christ*. Now *C* being the first Letter for *Christopher*, is the first Letter for the first Day of the 8th Month, *August*.

Now, Then I count all the Dominical Letters in Order, beginning with *C* viz. *c d e f g*, till you come to the Dominical Letter for the Year, and as many as it is to the said *G*, so many days in that Month is the first Sabbath, viz. the 5th Day; so having the first Sunday in the Month, its easy to know all the Days of the Week after, reckoning from Sabbath to Sabbath.

To make Trees grow much *Young Trees*, as *Ash*, *Elm*, *Birch*, *Oak*, but *Ash* especially, are in their Bodies about two Inches Diameter, which will be at three or four Years Growth; then take a piece of *Mail*,

Mail, or some such like Net of small Wire, and putting it in the Palm of your Hand, rub it pretty hard, but not to tear off the Bark, twice in a Year, and you will find such Trees will out-grow the rest very much.

To Cure the Rot in Sheep. Put them into a large Barn, set about with wooden Troughs, and therein feed them with Oats a day or two, then put in some Bay-Salt stamped small, and after that a greater quantity, till such time as they begin to distaste it; then give them clean Oats a Day or two more, and after serve them with Salt as before, and this Course follow till they are well.

Mr. Wolridge says, That if our Waste and common Down Grounds were inclosed, it will Feed more Sheep and Cattle by half than they do lying open; and that in case ten Acres were Sown with Clover-Grass, Turnips, Calt-Seed, Parsely, or the like, they will feed as many Cattle or Sheep, as 100 Acres of the same Land will, that is laid waste.

To make Butter better than ordinary, without setting the Milk for Cream.

As soon as the Milk comes from the Cow, and is strained, then Churn it, as usually Cream is done, also the Cheese made of the Butter Milk will be better than the best two Meal-Cheeses that you ever did eat; and one Pound of this Butter shall be better than a Pound and half of the best Butter made of Cream. *Probatum. Hartlib's Legacy.*

A strange Account of a Woman that had Three Hundred Sixty Five Children at one Birth.

On a Church Monument at the *Hague*, there is an Earl and his Lady, and 365 Children about them, all delivered at one Birth, half Male, half Female, the Balon that they were Christened out of hangs in the Church, and the Bishop's Name that did it, its about 200 Years since, as by the date appears; the Story is this: This Countess walking about her Door after Dinner, comes a Beggar-Woman with three Children upon her Back, to require an Alms, whereupon the Countess asked her if they were her own, she

she said yes, and that she had them at one Birth, as which the Countess reviled her bitterly, saying it was impossible for one Man to get two Children at once, the Beggar-Woman being provok'd with ill Words, and no Alms, wish'd that the Judgment of God might fall on her, and that she might bear at one Birth as many as there be days in the Year, which she did before the Years end, having never had a Child before.

*Epitaphs on some Tomb-Stones at St. Edmund's-Bury.
Upon one Joan Kitchin.*

*Here lyes Joan Kitchin, when her Glass was spent;
She kickt up her Heels, and away she went.*

Another on John Cabot.

*Here lyes John Cabot under this Stone,
One Thousand Six Hundred Forty and One,
Whether a Live or Dead, 'tis all one.
Neither Lament nor make any Moan,
Yet under his Head lay a Turf or a Stone,
Or any thing else, or nothing, 'tis all one;
Yet pray for John Cabot since he is gone,
Or if you please you may let it alone,
For whether you Pray or Pray not, 'tis all one.*

An Epitaph on Sarah Abraham, a Taylors Wife.

*From Abrahams Bosom full of Lice,
To Abraham in Paradise.
From Abraham to Abraham, Sarah's gone.
And left the Lousy Thief alone.*

Against Biting of a Mad Dog, Doctor Mathias.

Take Garlick, Rue, scraped Pewter, of each two Ounces, of Venice Treacle one Ounce, and one Quatt of Muscadine; put all these into it, and stop it close, and boil it two Hours in a Kettle of Water, then pour off the clearest, and apply some of the Dregs to the place bitten, and

Give the Patient two Spoonfuls of the Liquor Morning and Evening, nine or ten Days together; this never fail'd Man nor Beast.

To Pickle Sprats like Anchovies. Take a Peck of large Sprats without their Heads, and salt them a little over Night, then take a Pot or Barrel, and lay in it a Lay of Bay-Salt, and then a Lay of Sprats, with a few Bay-Leaves, then cover the Vessel, and pitch it that no Air get in; set it in a cool Cellar, and once in a Week turn it up side down, and in three Months you may Eat them.

Punch. Take a Quart of Water and a Quarter of a Pint of Brandy, a little Vinegar or Verjuice, or Lemon Juice or Lime Juice, which of them you can get, a little Nutmeg and Sugar, or a little Ginger; and if you please a little Treacle to Colour it.

Plants for making Cloth, Cordage, &c.

Hemp and Flax grow in *England*, and makes good Linnen Cloth; Cotton grows in *India, Arabia, Egypt, &c.* it makes Fustians, Bumbast-Stockins, &c. Nettles in some places are stript and made Cloth of. A fine Stuff is made of *Sericum*, which is a Growing Silk, that comes out of the Island *Seres*, where it Grows upon the Leaves of Trees, and some is made by Silk Worms in every Country. The Bark of Lime Trees makes Cables. The Coco-Nut Tree in *India*, makes Cordage and Tackle for Ships and Cloth, Canles and Girdles of the best Sort; that is the hairy Stuff next the outward Bark of it, and the Leaves serve to cover Houses. At *Oxford* among the Rarities, is a Purse made of the Bark of an Outlandish Tree.

For a soft Corn. Take a little Cotton fine pull'd out, and tye it on the Toe with a Thred; and in two or three days it will Cure it. *Proved.*

To Kill Rats and Mice. Take Raisons of the Sun, split and dip them in Arsnick Powder, and close them again, and lay them near, or in their Holes.

Another. Take Coddled Apples, and mix the soft Pap with Arsnick Powder, and some Sugar.

Another. Take some Hogs-Lard, Flower of Malt, and Arsnick,

Arsnick, mix them together; put some in an Oyfter-Shell, and lay where they come, and it will Kill them.

Note, Arsnick is a Rank Poyson, therefore wash your Hands after handling it before.

Pigeons are great Lovers of Salt, set therefore a large Salt Pot in your Dove-House, and temper the Salt and some Loam together, and they will feed on it with great Pleasure, and continue and Love the Dove-House.

Assa Fetida being boil'd in Water, and the Holes of the Dove-House wash'd therewith, will cause the Pigeons Feathers to scent, and that too so pleasantly, that the Company they fall into will come home with them. Cummin-seed boiled in Water, and apply'd as before, is also an Excellent Drawer; but a Salt or Proud Bitch bak'd, or roasted with Cumin-seed, put into the Belly, and set in the Dove-House, exceeds any thing.

The use of some Plants for eating.

Turnips, Carrots, Cabbage, &c. are so well known we need not tell you, tops of Hops and Turbips running up to Seed boiled and buttered, eat like Asparagus. Broom Buds pickled are of excellent relish, Roots of Tulips boiled and buttered is a rare Dish, Mushrooms boiled, pickled, or stewed, eat well, the Stalks and Leaves of Alexanders boil'd, or eaten alone, or with Fish, the Stalks pickled are a good Sallet, the Root of Arum being raw is very biting, but boiled is good Food, the Roots of *Tragopogon* or Goatsbeard boiled and buttered as Parsnips are better, Ashweed or Jump-about boiled when young with Bacon is a lovely Dish, and so is young Comfry: Lambs-Lettice, or Corn-Sallet is the earliest thing that I know is eaten raw, Pen-niroyal shred and put in a Bag Pudding gives a savory taste, the Buds of Elder, Nettle-tops, Water Cresses, and Alexanders, make good Spring Pottage, Horse-Radish Root sliced and scraped with Vinegar makes good Sauce for Mutton, so is Cabbage Leaves sliced small, with Pepper and Vinegar, and so are the Leaves called Jack-by-the-Hedge: Broom, Angelica, and Bawm, &c. serve instead of Hops to Brew, and give a delicate taste. *Cole's Art of Simpling.*

The

The Stalk of the great Water Dock tastes like green Sauce, and is as pleasant to eat as Sorrel. *Idem.*

Virtues of some Plants, &c.

Cut an Elder Stick, cut it on both sides so that you preserve the Joint, put it into your Pocket when you Ride and you will not gaul.

A handful of Arsmart put under the Saddle of a tir'd Horse will make him Travel fresh.

If a Foot-Man put into his Shoes in the Morning Mugwort, he may go Forty Miles by Noon and not be weary.

The Roots of Taragon and Pellitory of Spain held betwixt the Teeth makes them leave aching.

Its said that if a Woman with Child eat Quinces and Coriander Seed much, it makes the Child Ingenious; and on the contrary, if they eat much Onions, or Beans, or such vaporous Food, they will be Lunatick, or Foolish. The Leaf of the Great Burdock born or laid on the top of the Head doth draw the Matrix upward, and if laid under the sole of the Foot it draweth downward. Calamint will recover stinking Meat if laid amongst it while raw. If one that hath eaten Cummin breath on a painted Face the Colour will vanish away. The Seeds of Docks tied to the Left Arm of a Woman does help Barrenness. Wild Tansie laid to steep in Butter-Milk 9 days, and wash their Faces with it, it makes them fair, divers other Traditionary Stories there are. *Cole's Art of Simpling.*

Some Directions for Gardeners,

If you Plant one Slip of Sage, and another of Rue, it will prevent Toads coming nigh your Sage; for they have an Antipathy against Rue.

When you Set Cabbage Plants, make the Hole slooping, and not down right, and then more probable they will become Cabages.

Set Potatoe Roots in a Pot fill'd with Earth, and set the Pot within the Earth two or three Inches, and the Roots will grow greater than ordinary.

If Onions be taken out of the Earth, and laid a drying twenty days, and set again, they'l be a great deal bigger. The Cutting of the Leaves of Radishes or other Roots, in the beginning of Winter, before they wither, and then covering the Root somewhat high with Earth, will both preserve the Root, and make it large in Spring following. Rue doth prosper, and is stronger if sc. by a Fig-Tree, but if by Coleworts it will not thrive. Shade to some Plants makes them prosper more then the Sun; as in Strawberries, Bays, &c. Therefore among Strawberries Sow here and there some Borrage Seed; and the Strawberries under those Leaves will be larger than others.

Bays you must Plant North, or defend from Sun, by a Hedge-Row, and when you Sow the Berries, Weed not for the first half Year the Borders, for the Weeds shade them. *Scordium* delighteth to grow in shady Places. If Roots, Strawberries, Pease and Flowers, by making a hot Bed with Horse-dung, and casting Earth thereon, will make them a Month more forward, and they'l turn to great Advantage by the Price: or if you water once in two or three days, with Water wherein Pigeons Dung, or Sheeps-Dung hath been steeped; they'l grow much sooner. Some Plants will not grow near one another, because they draw the same Juice, and so rob one another; as Coleworts and the Vine, a Brale and a Reed, Rue and Hemlock: therefore set your Plants of as contrary Juice as you can together. If great Trees grow in your Garden, the droppings of them hurts your Plants, especially Ashes, and all that spread their Roots near the Top of the Ground. *W. Coles*, and *Lord Bacon*.

The Times to Gather Plants, and keeping of them after Gathered.

I conceive, the Sun and Moon have general Influences on Plants, the one for Heat, the other for Moisture, wherein the being of Plants consists; and that the full of the Moon would be a good time to gather Herbs, out of which the Juice is to be taken, being then most Plentiful; but for other uses the Leaves newly gathered, if they are
not

not very Young or very Old are best, but when green ones are not to be had, make use of dry'd ones, either in the Sun or in the Shade, so they be neither over nor under used, it signifies little. 2. Those that you gather for your use in Winter, gather a little before they run to Seed, for then they are best. 3. Gather them as near as you can in their proper Places; where you put them it matters not, if they loose not their Virtue by too much heat, nor corrupt by too much moisture. For Flowers gather them in their Prime, dry'd and laid up as aforesaid. 4. Let Seeds be gathered when full ripe, and kept not above a Year, for they then decay. 5. Roots, what you have growing that you can go to on all Occasions, trouble not your self to dry; but if they come from afar, hang them somewhat near the Fire, or they will rot. 6. Barks newly gathered are best, and they come up best in the Spring. 7. For the Barks of Roots, slit them, and take out the Pith, and that that remains is call'd the Bark. 8. If you would preserve the Juice of any Herb, pound the Herb and strain it, then clarify it by boiling it till no Scum arise, and when it is cold fill a Glass almost to the Neck, and fill the rest with Oil to keep out the Air, or else you may boil it over the Fire till its as thick as Honey, which some Physitians call the *Rob*.

St. Foin, or Holy Hay, commonly called Cinquefoin.

Its a mighty improver of dry and barren Ground, and excellent for feeding Cattel, in *France* they sow these Seeds, and Oats a like quantity, on Ground out of Heart, and Mow their Oats only the first Year, that it may root well, yet they may Mow it the first Year, but its not so well, but the Year following you may, and so for 7 Years, it commonly bears 4 Load or more on an Acre; after 7 Years break it up, and Sow it with Corn till it be out of Heart, and then Sow it with *St. Foin*, as before, for it does not impoverish Land as other Annual Plants do, but enriches it, when the Roots is turn'd up by the Plough, I have seen it thrive well in *England* on Chalky Banks, where nothing else would grow, and such dry barren Ground is fittest

fittest for it; (as Moist Rich Land is fit for *Clover-Grass*, and great *Trefoil*) (tho' St. Foin will grow pretty well on all Land) and will Flourish, it Rooting deep, when other Grass is Parched by heat; but wet Lands soon corrupts its Root. For the right managing of it, observe these Rules, or it will come to little.

1. Make your Ground fine, and Kill all other Grasses or Plants, for they will choke it.

2. Be not too sparing of Seed, for the more you Sow the thicker it will grow.

3. Expect but 7 Years Crop, and then Plow it up, or Sow it again with the same Seed or other Grain.

4. Let not Sheep or other Cattle bite them the First Year.

5. Your best way is to make your Ground Fine, as when you Sow Barly, and Harrow it even, and than to Plow these Seeds in alone, without any other Grain, as Gardners do Pease, but not at so great a distance; but make your Range about a Foot distance one from another, and they'll see it Flourish like Green Pease, especially if you draw the Plow through them once or twice that Summer, to destroy Weeds and Grasses; and if you do thus great Clover and other Seeds, may be Mow'd twice the first Year. There is another sort at *Paris*, called *La Lucern*, which is not inferior to St. Foin, but rather better for dry barren Land, and is to be managed as St. Foin. Thus you may improve barren Ground of 2 or 3s. an Acre, to forty or fifty Shillings an Acre. There is a Grass at *Madrington* near *Salisbury*, that is 24 Foot long, with which they feed Hogs. I question not, but if the Seeds of it were sown in Rich Meadows, it will yield extraordinarily.

Mr. *Worlidge* says, That for *Clover-Grass*, a Rich light Land, warm and dry, will afford a great Profit: that a Parcel of Ground a little above two Acres of *Clover-Grass*, the second Year yielded in *May* two Load of Hay worth 5 *l.* the next Crop of Seed was ripe in *August*, and yielded three great Loads worth 9 *l.* that Year, the Seed was 300 *l.* which with the Hay was valued at 30 *l.* besides the after Pasture. Another president is, that on 4 Acres grew 12 Load of Hay at twice Mowing, and 20 Bushel of Seed ;

one

one Load of Hay that was Mowed in *May*, was worth two Load of other Hay, and the after Pasture three times better than any other, though four Acres in one Year yielded eighty Pound.

Another. That 6 Acres of Clover, did maintain 6 Months 10 Oxen, 13 Cows, 3 Horses, and 25 Hogs, valued at 40 l. beside Winter Herbage. It will prosper pretty well on any Ground that is not poor. Clover-Grass lasteth but 3 Years. An Acre of Ground will take 10 pound of Clover-Grass-Seed, in Measure about half a Peck. The more you Sow the better, some have Sown 16 pound on an Acre with good Success; let your Seed be the best, and then in *March* or *April* Sow your Clover-Grass upon your Barly and Oats being harrowed, or you may Sow it alone, and you may cut it about *June* the first Year. If you Sow it alone, the best time is about *Michaelmas*, and about the end of *May* you may cut the first Crop, the exact time is when it begins to knot, and after feed it with Cattle till *January*: if you will preserve Seed, expect but two Crops that Year, the first as before, the second must stand till the Seed comes to a dead ripeness. After your Seed is thrasht the Cattle will Eat the Stalks, but if too Old they will not. After two Years standing, if you let it shed its Seed, it will store it with Clover; and one Acre of this Grass will feed as many Cows as 5 of the other common Grass, and your Milk will be much better, and exceed in quantity, and it fattens well. In *Flanders* they cut it daily, as your Cattle eat it, and give it under Trees, or in Sheds in Racks. Let not your Cattle at first eat too much of it lest they surfeit. When its thoroughly dry, in *March* Thrash it.

A short Account of the Life of Ebin Yoc Dan, the Self Taught Philosopher.

Ebin Yoc Dan's Mother was Married without her Father's Consent, to a Person that he no ways liked, and being a Prince reputed austere she durst not let him know it; in process of time she was with Child of *Ebin*, and was brought to Bed privately, and with the help of her Maid made

made a sort of an Ark, pitched it well within, puts the Child into it, and with many bitter Tears and Sighs complains of her Father's Cruelty ; and being no longer like to conceal it, takes it and places the Ark at the Sea side, leaving it to the Mercy of the Waves and Providence ; the Tide coming in, carried off the Ark, or Chest, and in a day, or thereabouts, the Waves had driven it many Miles into an Island Inhabited by Tame Beasts, and as the Child lay by the Shore crying and heaving, a Roe happened to loose her young one, and hearing this Cry of the Child made to it, where the Child heaving, and the poor Roe doing the same, the Lid flew open, she gets the Child out and suckles it, and continued with it till her Death ; when the Child was about two Years old it began to run about after the Roe, and feed on Acorns and other Fruit that grew in the Island among the other Beasts in that place, but often finding hard usage from them, they pushing it by when Provision stood fair for its turn, vexed it often ; at last growing to be four or five it got a Stick, and when the Horned Inhabitants eat not fair, it would knock them over the Pate, and make them know their Driver, and then began to grow stout, his Foster Mother then also grew old, and could not stir abroad for Food, which the Child perceiving, brought her Food and nourished her ; and one day coming home he found her dead, whereupon he began to cry out for her to eat, thinking she had been asleep, and then began to hunch her to awake her, and wondering that would not do, he opened her Eyes, and having found that successless, conceived that she was past ever eating again, so left her ; one day seeing two Rooks fighting, one killed the other, and he see the Victor bury the other, by scraping a hole in the Sand, upon this he did so by his Mother ; he then being grown a great Boy began to wonder he could not find any Creature in the Wood of his shape, but that as he wanted Horns, &c. yet he had Hands, and by the use of them he was able to deal with any of his Enemies ; one day as he was walking by the Sea side he espied two Fir Trees, and by the heat of the Sun and their beating one against the other they fired, this made him look on with admiration, and going to take up some Fire

in his Hand found it too hot to hold, then espying some Fish near that was oft thrown on the Shore, he takes some of them, lays them on the Fire, and finding in broiling they smelt well, he takes one of them to taste it, and found it agreeable, he then made this his Food, and continually kept the fire in for that purpose; he also got a young Deer, which he bred up, and made it so familiar, that at last he got on the Back of it, and so would Ride about; and as the Beast increased in strength and swiftness, he would at times get on the Back of it, and with Stirrops made of Bark, would Ride with great pleasure and swiftness; at times also he would Contemplate on things above, as that there must be something superior to Sun, Moon, and Stars, and all that was visible, and that this must be God; also he affirmed, that the best and most certain Knowledge of God is not that that is attained by Premises premised, and Conclusions deduced, but that that is enjoyed by conjunction of the Mind of Man with the Supream Intellect, after the Mind is purified from its Corruptions, and is separated from all Bodily Images, and is gathered into a profound Stillness: While he was studying Nature and Celestial things, it happened that a Person living in a City where Wickedness abounded, resolved to leave it and betake himself to this Island, where having made ready things suitable for Subsistence takes a Vessel, and a Servant conveys him in it to the Island; this Gentleman walking one day in the Wood espied a naked hairy Man, and makes towards him, *Ebin* espying him, was much afraid, and fled from him, but he pursuing, and his Gesture seeming Love made him stop, then the Gentleman spake to him, but he understood him not, however he got him to his Tent and began to make Signs to him, in a short time learned him to Speak, Spell, and Read, also acquainted him that there was Towns and Cities, and Multitudes of People in the World in their shape, which *Ebin* desired to know, thinking that there had been none but them two; he told him also that their Vicious Lives and Behaviour made him forsake them and retire thither, *Ebin* said, surely it was because they had none to instruct them in virtuous Living; the Stranger told him they had multitudes of Teachers and

Instructors,

Instructors, but it availed little, *Ebin* could not think it was so, but was willing to go to the place and instruct them himself, having by his own Attainment and the Persons Instruction, improved in Knowledge of Truth, and after having Preached some time among them, he found his Friends Words too true, whereupon *Ebin* and his Friend returned whence they came, and there ended their days; this is a short Account, and according to the best of my Memory.

Yours I. B.

*A Strange Account of what hapned at Hamelen in Germany,
By Rats and Mice.*

This Town was annoy'd with Rats and Mice, and it chanced that a Pied-Coated Piper came thither, who covenanted with the Burghers for a great Reward, if he could free them from the Vermin, and he was to have it in a Year and a Day after. The Agreement made, he began to play on his Pipes, whereupon all the Rats and Mice followed him through a great Slough hard by, and all were drowned, so the Town was freed. At the Years end, the Piper comes for his Reward, the Burghers put him off slightly, and often offer'd him a small Sum, which he refusing, and staying some days in Town; on Sunday Morning at high Mass, when most People were at Church, he began to Play on his Pipe, and all the Children of the Town followed him out of Town, to a great Hill, not far off, where a Hill opened and let him and them all in, and then closed up again. This hapned a matter of 300 Years ago, and in that Town they now date their Bonds and Bills, and other Matters, from the Year of the going out of their Children; and at the Foot of this Hill, is now a great Stone Pillar, whereon this Story is Engraven.

A Strange Story of eight English Men left in Green-Land.

In the Year 1630, two Ships were sent to *Green-Land*, and arrived there *June* the 11th; the Captains Ship stayed at *Bell-sound*, and the *Salutation* at the fore-Land. The Captain having Killed many Whales, sent for the *Saluta-*

tion to take in some of the Train Oyl: in the way the Master sent eight Men to Kill Venison, who took with them two Dogs, one Gun, two Lances, and a Tinder-Box; went on Shore, and Killed 14 Deer, and staying all Night, the next day proved Foggy, and the Ship was so far from Land they could not Espy her, whereupon they got into their Shallop to seek for her, and to be more easie, heaved their Venison over-board, but all in vain, the Ship was gone, and they astonished to find themselves left where neither Turk nor Christian had ever Inhabited; nay, they had heard that some Malefactors were Repriev'd on condition they would Live there, and when they had seen it, chose rather to return and be Executed, than dwell there; and also that Nine Men had by accident once been left there, and all were torn to Pieces by Wild Beasts. And that that augmented their Sorrow was, that they wanted necessary Provisions; no Cloths to keep them warm, nor Food, nor Shelter. In this extremity they resolved to go to Green-Harbour, and Hunt for Venison; and they kill'd 19 Deer, and 4 Bears, with which they Loaded their Shallop, and also carri'd some Fritters of Whales, to *Bell-Sound* to there Tent, where they intended to Winter. When they arrived at *Bell-Sound*, they took out their Provision, and with part of a Tent, Pieces of Old Casks, and Old Shallops, made up a House or Cabbin, where they Lodged two and two, and with great Industry provided for Wood and Shelter against the Cold; their Beds was the Deer-Skins dry'd. Having thus fitted themselves, looking out *September* the 12th, they Espy'd two Sea-Horses a sleep on the Ice, with an old Harping-Iron they Slew them both, and Flead and Eat them, and a little time after they kill'd another, but the Darknes and Cold increasing, and having but half enough Provision, they fasted on Wednesday and Friday. To mend their Clothes, they made thereof Rope Yarn, and Needles of Whale-bone. *October* 10, the Nights grew long, and the Sea froze over, and Fear and Grief began to seize them; then they Prayed to God in this Distress, for Strength and Patience in their Misery, and by his Assistance chear'd up themselves, to use means for their Safety. They Roasted their Venison, every day half a Deer,

Deer, and stow'd it in Hogsheds, leaving raw a quarter for every Lords Day. Now here another Affliction befell them, their Whale-Fritters grew Mouldy, and their Bear and Venison would not hold out 5 Meals a Week, then they cut off one Meal more, and three Months fed four days on the Mouldy Fritters, and 3 they lived on Bears and Venison; and they not only wanted Meat, but Light also of the Sun, from *October 14*, to *February 3*, but the Moon Shined as with us in *England*; then with Rope Yarn and Oyl they made a Lamp, which they kept continually burning, to their great Comfort. In *January* the Days Lengthened, and the Cold Strengthned, that it rais'd Blisters on their Skins; if they toucht Iron it stuck to their Fingers, if they fetcht Water, they were sore as if beaten, and Snow Water was all their Drink from *January* to *May*, which they melted with hot Irons. In *January* they perceived their Food would but last 6 Weeks, then they Pray'd to God for Supply, and looking out soon after, they Espy'd a Bear and her Cubs coming towards their Tent, they Slew them with their Lances, and they served them to the 20th day of *March*, then Foxes and Fowl came abroad, and they catch't 60 Fowls, and about 60 Foxes, and Kill'd 7 Bears, and then they Eat two or three Meals a Day, and their Strength encreased. *May* the 1st, they went out to seek for more Provision, and they found two Ships come from *Hull* into the *Sound*, which hapned to be the Men that had left them there: The Ships Crew was mightily glad to find them, and with Joyful Hearts embraced one another; the Men left their Tents, and went a Ship-Board, where being Clothed and refreshed with Victuals, in a short time recovered Strength, and with the *London-Fleet* came safe into the *River Thames*. Their Names were, *John Davis, Richard Koller, Henry Bett, Thomas Ayres, Robert Goodfellow, John White, William Fletcher, and Edward Pelham*.

Chavity rewarded. A Pleasant Story.

One Day a Person being Fishing, it hapen'd that he pull'd out a dead Mans Skull; he imagin'd that it came

there by chance, and that it was but a Deed of Charity to Bury it, whereupon he goes home, and gets a Spade, and finding a convenient place, he fell to digging, and having dug deep, he espy'd a large old Bag, which pulling out, found it to be full of Gold. And thus the Poor Man was enriched unexpectedly.

Urine. In *Holland* they preserve the Cows Urine as carefully as the Dung for their Land ; old Urine is very Excellent for the Roots of Trees, *Columella* says, That a good Husband may make 10 Load of Dung for every great Beast in his Yard, and as much for every one in his House, and one Load for small Cattle, as Hogs ; this is strange to us, and I believe there are many ill Husbands by this Account. I know a Woman near *Canterbury*, who saveth in a Pail, all the droppings of Urine, and when the Pail is full sprinkleth it on her Meadow, which causeth the Grass to grow much, at first it looks Yellowish, but after a little time it grow'd so wonderfully, that her Neighbours was like to have accused her of Witchcraft. *Hartlib.*

An Account of the Isle of Pines.

About 50 Years ago, as near as I remember, was an Island discover'd by one *George Pines*, from whence it had its Name, who being driven by stress of Weather on this unknown Coast, and his Ship split, by the Assistance of some Planks, He, two White Women, and one Black Woman, got ashore in this Island uninhabited : The Place afforded Goats, Deer, and plenty of delicious Fruits, it was also a very warm and Pleasant place to dwell in, and by these 3 Women in about 30 Years time, he had stockt the Island with many Hundred of People. Another Merchant being by chance drove upon this Island, and perceiving it Peopled with a Naked White People, inquires what the name of the Place was called, &c. the Man answering in *English*, he with divers of the Ships Crew, went a Shore, taking their Guns along with them ; and as the Man was Conducting them along, one espying a Deer Shoots him ; the noise of the Gun so affrighted the Man, and the rest of the Islanders, that they Fled into Mountains

tains and Woods for Shelter. But in some short time, by finding out some, and their civil behaviour towards them, made all the rest to come about them, where great civility pass'd. And an Account also was given of their Original.

As for their Religion it was Protestant, and some part of a Bible they had by them, they had a Place of Worship, where Prayer and other Religious Exercise were sometime performed, (but through their dissentions among themselves, occasioned by the *Phils*, (which is the Name of the Black, by whom *Pines* had a great Number of Children, who were in Rebellion;) their Worship was almost laid aside, which our Merchant hearing, caused his Men and others, to take most of the Blacks and Try them, and Execute several of the Ring-Leaders of the Rebels, so that he brought them to Obedience to the Whites. He also Erected a Building of Timber for their Governour, placing the Eldest, and he that the Inhabitants Voted, for in that Station. The rest of the Inhabitants generally dwelt in Hutches, or places resembling Bowers. Thus having fixed them, and brought them into a Loving and Peaceable Condition, having instructed them in Religion and Politicks, left them a Bible, and what other Books they could spare; and also leaving them what Cloths they could spare for their Governour, also they left them Axes, a Gun, Powder, and other Materials. After they had continued some considerable time among them, they took leave of them, in much Love and Friendship; the Inhabitants conducting them to their Ship, set Sail for *England*, leaving as near as I can remember, above eight Hundred Whites, and two Hundred Blacks. This is the best Account I can give of this Matter, leaving you to Judge of the Truth of the Relation.

Of Bees, and how to manage them to great Advantage.

Bees are both Delightful and Profitable, if managed with Care, in order to which, I shall give these short Directions.

If you have no Stocks of Bees, but must buy them, I advise you first, not to give Money for them, but some other Commodity; for tho' there be nothing in it but a Superstition

stitious Observation, yet such things often dishearten People that are apt to credit such Reports. Having Purchased, you must be sure to carry them gently in a Sheet between two Persons, on a Pole, in the Night-time, that they be not disturbed, nor their Combs disordered; the best time to remove them is in *April*, and then carry them to a Pleasant Place, lest they leave you, nor must you immediately open them after you have placed them in your Garden, but wait till they are at rest, which you will know by their ceasing humming; be sure place them that the Hive Mouth be to the Rising of the Sun, observing that the Air and Water, as also Herbs, Trees and Flowers about them be very Wholesom. Those they much delight in, are *Rosemary*, *Cassia*, *Thyme*, *Saffron*, *Bean-Flowers*, *Mustard-Seed*, *Flowers*, *Pinks*, *Mellilot*, *Poppy*, *Roses*, and all Sweet Flowers, Herbs and Trees. Those they dislike, are *Worm-Seed* wild Cucumbers, *Elms*, *Spurge*, *Laurel*, *Southernwood*, and all bitter Herbs and Trees, delighting most in Vallies, and near-Purling Streams. The best Honey is extracted from *Thyme*, the next best from Wild *Thyme*, and the third from *Rosemary*, tho' there is good Honey where none of these grow: also where your *Clovergrass*, *St. Foin*, &c. grows, good and much Honey is produced. Be sure, if you intend to mind Bees, that you be cleanly and sweet, and Eat no stinking things, as *Garlick*, *Onions*, &c. lest they sting you, and keep their Hives clean from Cobwebs, Moths and other Filth, or they'l. not thrive. Read more of these Matters in *Mr. Worlidge*, his *Compleat Bee-Master*, price 6 d. and *Rusden* of Bees, price 1 s. 6 d. and *Butler* of Bees, price 4 s. The only three Books Extant on this Subject. All sold at the Ring in *Little-Brittain*. In the beginning of *April* Bees begin to Work, and if they stand in a Pleasant place, they will work so chearfully, that they will afford Honey three times in a Summer, viz. the latter end of *May*, the latter end of *July*, and the latter end of *August*, if the Summer be temperate; tho' if you would have them subsist well in Winter, to take their Honey in *May* and *July* is sufficient.

If it happen that by reason of the Young Brood, the
Hive

Hive be overcharg'd, which by their cluſtring about the Mouth of it, and Humming, you may plainly diſcern; prepare a New Hive, ready rub'd, with Fennel, Bean-Tops, Thyme, Bawm, Marjoram, Bean-Flowers, Milk and Honey, Hyſſop, Mallows, and with ſome of theſe rub the Hive well, but rather with a Sprig, or Branch of the Tree they ſwarm on, then dip ſuch Sprig or Branch in Mead, or Honey and Water, or with Milk and Salt, or Salt only; and when you have rub'd the Hive well with the Herbs, that its wet, obſerve the coming out of the Young Bees for ſeveral days, eſpecially when the Sun ſhines hot on them, leaſt they ſwarm on a ſudden, and take Wing and Fly away, which is prevented by Ringing on a Warming-Pan or Candleſtick, &c. when you ſee they are ſettled either on Tree, Hedge or Ground; if they ſettle on the Ground, lay the Hive prepared as before directed over them. If on a Tree, take your Hive rub'd with Sweet Herbs, and let one hold up the Hive, and another with a gentle hand ſhake the Bough they hang on, that they may fall into the Hive, then immediately ſet it on a large Cloth, and take Boughs that are Green, and put juſt under the place you take the Bees from, and cover them with ſome more Boughs, and the Corner of the Cloth they ſtand on, and let it reſt till all the Bees are gone in. If in a hard Winter Honey fail, then replenish their Store with Brown Sugar mixed with Annifeed-Water, till its juſt Liquid, and by filling long pieces of ſlit Cane with it, and then put the Cane gently into the Mouth of the Hive. You may give them alſo Honey and Raiſins after the ſame manner. Be ſure you cover them with warm Houſings of Straw, and feed them with Care, and they'll reward your Pains Bountifully.

Thus I have given you the Opinion of ſeveral of the beſt Authors, for the improving of this Noble Inſect, and that with as much Brevity as poſſible.

Its ſaid Bees will not Fly away, if you ſmear the Holes of their Hives with the Dung of a Calf newly Killed. *Wicker.*

Bees will not Fly away, if you bruife the Leaves of the Wild and Garden Olive-Tree together, and about the
Evenings

Evenings anoint their Hives with the Juice, or else with Water and Honey, both the Walls and the Hives.

To know if Honey is mixed, or falsified, throw some into the Fire, and that that is false, will not burn clear. *Diophanis.*

The best Water for Bees, is that that runs through Stones and Pebbles, and is very clear. This makes them Healthful, and makes good Honey, and you must lay in great Stones and pieces of Wood for them to pitch upon, when they drink. If you have no Running Water, bring it to them from a Well or Fountain, in Pipes, least they fall Sick with carrying Water.

In taking Honey, you ought to leave them a Tent part, both in Summer and Winter, but in Winter you must take but one third part. *Dodymus.*

To make Ratifia.

Take a Quart of Brandy, a Quart of Spring-Water, a Pound of Sugar, an Ounce of Cinamon, a Dram of Cloves, a quarter of a Pint of Orange-Flower-Water; put these in to a Skillet close cover'd, and set it on a slow Fire, till the Sugar is dissolv'd, let it infuse for 24 Hours, then strain it, and colour it with Cochinele. If you thin! not strong enough, put more Brandy to it.

To make the Teeth White.

Put some Brick-dust on a wet Linnen Cloth, and rub them, and wash the Mouth well with fair Water.

To harden the Edge of Knives, or Swords, &c.

Water pressed through a Cloth from Worms, beaten and mixed with the Juice of Rhadish in equal portions make the Edges of Knives, Swords, and all other Instruments, that are quenched twice or thrice in them, when they are Forged, that they cut Iron like Lead; this came from a Cutler in *Paris*.

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Major Putnam's notes
1928.